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EDITORIAL NOTES.

Winter Gas Coal Supplies.

ALL prudent gas administrators are making careful inspection of the coal situation, and of supply prospects, so that there may be no failure of the gas service in their districts. There is naturally a desire to secure British brands of coal for gas making; and this is a matter which has been the subject of correspondence between the National Gas Council and the Mines Department. Although we are all hoping that in a short time the coalfields will be working, as far as is possible, at full capacity, it is unsafe to calculate upon the supply of British coal being sufficient to meet, without the aid of imported material, the requirements of the country during this winter. One has only the present position by which to judge. It is calculated that our normal home consumption of coal is approximately 180,000,000 tons per annum. If we assume that 100,000,000 tons are wanted in the winter months, the average requirement during the next few months would be a little below 4,000,000 tons a week. It is pretty safe to say that to-day there are no considerable stocks in gas-works or elsewhere, though doubtless those gas undertakings possessing vessels by which coal can be procured from the Continent, have been able to obtain a surplus beyond current needs.

As the position is to-day, British coal is being raised at the rate of rather more than 1,000,000 tons per week; and imported coal also averages about 1,000,000 tons per week. Last year at this time, the output of the British mines averaged 4,680,000 tons per week; and then stocks had been accumulated throughout the country for winter use. In October last year, we were exporting roughly 1,090,000 tons per week, which left approximately 3,600,000 tons for meeting home requirements. The present weekly availability of rather more than a million tons of coal from home sources, and the same quantity from abroad, means a shortage compared with last year (without taking account of stocks then in hand) of at least 1,500,000 tons; and the transport difficulties of winter are fast approaching. It is well for gas undertakings to have before them such facts as these in considering their arrangements for the immediate months, although there is now good ground for anticipating that there will be an early general resumption of work throughout the British coal industry.

While dealing with this matter of provision, it may be of interest to mention that the Board of Trade returns disclose that during September there were imported 3,940,880 tons of coal, which was somewhat above the total exports of British coal in the corresponding month of 1925. Altogether, since the strike began, 10,837,697 tons of coal have been received from abroad; the aggregate value being £20,416,839, which averages £1 17s. 8·12d. per ton, which figure, of course, has no real significance in view of the great difference in the distances from which coal has been brought. It may be useful to have on record the figures relating to imports for each month since the beginning of the stoppage. They are as follows:

	Tons.		Value.
May	3,618	..	£5,983
June	600,634	..	£966,290
July	2,319,657	..	£4,147,995
August	3,970,442	..	£7,542,847
September . . .	3,940,880	..	£7,749,101

At the present time, with requirements increasing, there should be no diminution in the quantity of coal imported; but naturally, as the British mining industry gets nearer normal working conditions, the imports will steadily decline, although there is little prospect, while demand continues high, that the price of the British product will show any great recession from the figures which it now commands. Too much hope must not, therefore, be built on an early opportunity of being able to average down materially the cost per ton of stocked imported coal by merging with it lower priced British coal.

The Grand Finale.

THE country has now before it the plans of the Miners' Federation Executive for their grand finale. It is the capital act in an unenviable record; and it carries them to the very apex of absurdity. They and the district delegates who are loyal to misleadership do not, of course, look upon it in this way. They realize that they and their foolish policy have been beaten all along the line; and what they have decided to attempt is the best that their shallow minds can devise in the way of heroics. They have converted themselves into a "Council of War," with the view of carrying out the programme of madness which they placed before the miners and the country the week before last. The best aspect of the new title is that it fits them and their actions better than the more prosaic title of the Miners' Federation Executive. They should have adopted it at the very beginning of this brutal business—for they have been doing nothing but warring against the country, the coal industry, and the misguided miners' interests from the very first. The title, however, will give the country at large a right appreciation of the manner of men who are in charge of the labour element of the mining industry.

The Executive feebly plead they cannot help themselves; they must carry out the "mandate" given to them by the districts—a pseudo mandate secured (for the purpose of a cloak) by all the artifices of which they are past-masters. Other people can see through their plea. A wrecking policy suits the extremists; and their ambition is not confined to the coal industry, but to all other industries, and all people dependent on coal, as attest the intensified attempts they are going to make to withdraw the quarter of a million of men who have returned to the mines, to stop coal production at the outcrops, and to try to secure an embargo on foreign produced coal. The endeavour to secure realization of the first and second proposals is to be made by much speech-making by the members and officials of the Federation and by the miners' members of Parliament, who are to be sent out into the highways and by-ways of the mining areas to preach

loyalty to an organization which has made such a grievous mess of the interests of the workers. They may be temporarily, but only partially, successful. The embargo on coal, combined with a trade union levy in aid of the miners' fighting resources, is to be urged upon the General Council of the Trade Union Congress, from whom there is unlikely to be much sympathy. The chief feature in the programme, however, is the withdrawal of the safety men, which is to cap the weaning from work of the miners who are weary of slavery to the ambitions of the ultraists in the Miners' Federation. To secure this withdrawal, arrangements are being made for a meeting with the Union controlling the safety workers. There, again, little chance of success exists; the safety men's Union having stood firm in the protection of the general interests, including those of the miners, who will all wish to return to work some day, and, when the day arrives, will not want it to be to an industry crippled by the insane folly of their own Federation. It was stated, at the delegates' conference on Thursday, that the voting of the districts confirmed the wrecking policy (indicated in the foregoing) by 460,150 to 284,336. But the method of voting was the usual farcical one, and not a ballot to show individual decision in the matter. There is little doubt, too, that the bulk of the men who are at work were too busy to take part in the farce; but if their views are correctly represented by their return to work, and their numbers were added to the 284,336 against the wrecking programme, there would have been an outvoting of those in favour.

Just a glance over the events preceding Friday, when the announcement was made that the Executive had converted themselves into a Council of War, and that an intensified campaign was to be waged. Each morning prior to the meeting the members of the Miners' Executive and the district delegates woke up to find the outlook for them gloomier than before. By Thursday the stream of men returning to work had grown to large volume, and about a quarter of those whom the Federation had deluded were back at their old jobs. Worse still, in the Federation's own strongholds of Lancashire, Yorkshire, Wales, and Northumberland, big clefts had begun to appear in the walls of resistance—despite the stand-firm appeals of Mr. Herbert Smith and the absurdities and mendacity which Mr. Cook continued to disseminate in his flights here and there. Only one interpretation could be given to all this—that the men were realizing that the big folly of the Federation had undermined central recognition and power, and had made district settlements preferable. In some districts where the pits cannot get into full employment at once, there was keen competition for jobs, and much disappointment for those who could not be immediately taken on. Another uncomfortable piece of information for the Federation Executive was that it was calculated that, during the week ending Oct. 9, not far short of 1,000,000 tons of coal had been raised from British pits—an increase of something like 200,000 tons upon the preceding week. It was also stated that the average output per man per week is now something like 5 tons, or a ton better than in the pre-strike period. Some collieries reported, too, that the average production had increased to 28 cwt. per day. This shows that the men at work are now fully alive to which side their bread is buttered. The delegates also had before them the returns regarding the imports during September, which showed that something like 1,000,000 tons per week had been received. The Executive and the delegates also learned that the safety men's organization had re-affirmed their intention not to cease performing their ordinary duties. Further, the "Council of War" had the unhappy knowledge that nothing effective could be done (to help them in their militant programme) in respect of an embargo or a levy, for the simple reason that leaders of trade unions connected with other industries have before them the effects and lessons of the general strike, which have proved to them that their business is not to inflict injury upon the work of their own members, in order to give assistance to the men of another industry in which a dispute has been carried on with such distinguished ineptitude as has been the case in this instance. At the conference of the Labour Party at Margate early last week, some plain home truths were addressed to the miners. The general strike and the prevailing unemployment which followed have brought many of the unions to parlous financial state; and they are not in the position to do anything to help the miners by depriving their own men of work through placing an embargo on coal; and they are certainly not going to impose a levy on their members in aid of the miners in view of the finanacial circumstances of their own unions. It is to-day every union for itself. Mr. J. H. Thomas states that no less than 45,000 "N.U.R." men have not been able to return to work since May 1, because there is not the work for them to do, and that 200,000 are working only three days a week. Other big unions are in even worse condition. Mr. Ben Tillett told how the Transport Workers' Union have spent every farthing in the struggle, and are £500,000 in debt; while, owing to the general strike, 80,000 of their members are workless. There is the point, too—not mentioned at the conference—that all the members of trade unions, employed and unemployed, have now to pay a heavy price for fuel, through the operations of the very people who are now asking them for financial support to make the fuel and employment positions still worse.

Thus we see that the constituents of the resolution which the Miners' Executive and district delegates passed have already all been defeated by the common sense which to-day animates the doings of other unions. In short, the programme of folly has been riddled through and through, and that was the position the conference of delegates had to face at their meetings on Thursday and Friday. In desperate case, to try to save some of the features of the much damaged face of the Federation, they decided upon the Council of War and the intensified campaign. These incompetents are, we feel, entering upon their last ride before the final crash. But there are already indications that the new bombastic title has suggested to hotheads among the strikers that the infringement of law and order is now tolerated by their leaders. That view will be short-lived, if the Government stand firm, which there is every ground for believing will be the case.

Collaboration in Fuel Use.

The Electrical Power Engineers' Association (Southern Division) have held their annual dinner; and it gave an opportunity to Col. J. T. C. Moore-Brabazon, Parliamentary Secretary to the Ministry of Transport, to call attention to a subject which is being brought more and more to the forefront of industrial and domestic policy. The question is one which fits in neatly with other modern movements aiming at national economy and efficiency, and the purification of the atmosphere. It is the utilization of our coal supplies with the utmost efficiency, instead of deliberately wasting some of its valuable properties, and promoting damage. Col. Moore-Brabazon, in a post-prandial speech, pleaded for collaboration between the public services which consume coal and supply light, heat, and power. He regards it as a pity that the gas and electricity supply interests are mutually inimical. They are not so "inimical" as some of the electrical firebrands try to make out. It is true they are rivals for business, and for it they compete keenly. But that has nothing whatever to do with the technical question of the utilization of our coal resources by both interests in the way which will be of general and progressive advantage—not only to the industries themselves, but nationally. The gallant Colonel is insistent in the view that, for the good of the country as a whole, the big coal-consuming services should be welded together as far as is economically possible. A co-ordinated scheme of working in his view would naturally furnish the public with light, heat, and power on the best basis of economy; and a proper method of coal pre-treatment would also go far towards providing the motor spirit required for transport.

From what has been heard on this and other occasions, it is plain that Government Departments are beginning to realize that fundamental to light, heat, and power supply in this country is the proper treatment of coal, instead

of using it in crude form; it is also beginning to dawn on them that industry and domestic life require heat as well as power, and that heat is the greater and more universal need. We have also had the Royal Commission on the Mining Industry recommending the establishing of an Advisory Fuel and Power Committee; and the Government have already appointed one composed of influential and competent members. It is a pity the Government did not realize all this before they chained themselves to the electricity supply scheme. In that they began at the wrong end. Investigation by the Fuel and Power Committee should have anteceded any other movement; but perhaps even now, this body may do something to help to rectify the mistake.

Another investigation is that by the Joint Committee of the Institution of Electrical Engineers and the National Gas Council. Upon this, upon collaboration of any kind between the gas and electricity industries, "Meteor" of the "Electrical Times" throws cold water. It has grown into a habit with him; and his last essay shows the feebleness of his attitude, and a mind groping in the dark. He puts the major part of his criticism in the form of questions, which is the most futile method of argument on a matter of this kind; but it has the recommendation that it does not definitely commit the writer to anything. He prefaces his questions by saying: "Let us "suppose that we accept the sort of fuel that our very "powerful gas interests and their experts would place at "our disposal." Then he asks: "Are the two industries "always to be commensurate?" "Is the gas production "in 1950 or 1960 to realize even approximately the fuel "that will be required by the electric power stations?" No one can tell. Then he tries to frighten his readers with the silly question, "May there not be a tendency to ensure and guarantee to the gas interests such a field of consumption that their output of coke will meet the power stations' requirements?" We should say such a guarantee is as unlikely as the collapse of the Alps. Then comes another equally absurd inquiry, "If the electric supply systems consume the very inferior grade of fuel, will the serious extra cost of burning it be a charge upon electricity or upon the service for whose benefit the sacrifice is made?" Is the author of many questions sure that it is an "inferior" grade of fuel, seeing that it is mainly pure carbon, and without smoke and soot producing properties? Is it an "inferior" fuel when, by its proper use with slack, it makes a better fuel bed under boilers for steam-raising than (say) slack can possibly make alone, and, so used, the efficiency or steam-raising is high? "Meteor," we suppose, does not presume to place his opinion on a plane superior to that of the electrical engineers who are using coke or coke breeze in this manner on the "Sandwich" system. Perhaps he does; if so, other people reserve the right to place their own value upon his opinion.

Other questions are asked by the same writer, the intent of which is to impale the gas industry as the instigator in this matter of linking-up the gas and electricity industries in respect of fuel supplies. We are a wicked, designing people in the gas industry; and our object is not progress, but something mercenary. He would like people to think that the gas industry hopes to gain immensely, and the electricity industry be serious losers, by collaboration. One of his questions indicates that the gas industry is looking for an opportunity to place some of its charges on other shoulders, and so impede competition; electricity being the hapless victim. We are inclined to think that the electricity industry is not so destitute of clever men that it will not be able to frustrate the imputed evil machinations of the gas industry. We also deny the "soft" (in a double sense) impeachment that the gas industry has been persistently pestering the Government for a co-ordinated basis of coal pre-treatment. "Meteor's" outlook on things appears to be distinctly narrow, fearfully distorted, and positively dismal. He further asks, Why should Great Britain be the only country in the world where the Government intervenes to stabilize the gas industry alongside an electric supply industry on which the whole future depends? We are not aware that the Government have any such benevolent intentions as to move for the stabilization of the gas industry; their views are directed to the more elevated one of national expediency, with a view to economy. But the fact that other countries have not moved in the direction of the co-ordination of fuel supplies for beneficial purposes, is no reason why this country should not lead. It is not a very enviable position to be always following others, showing no initiative and doing none of the pioneering; and we do not see why Great Britain should wait for other countries to start on a career of national fuel economy and utilization efficiency before doing so itself.

We have not yet had the investigations to ascertain what industrial and national worth there is in the co-ordination of fuel use. Therefore "Meteor" would do well to calm down his agitated soul, and wait in patience for the result. The Committees will know, before their investigations end, much more about the matter than "Meteor" does at present. He should keep himself free from the rôle of a mulish obscurant; but there is certainty, unless he is careful, he will develop into one in respect of this question. The men who form the Government Fuel and Power Committee, and the members of the Joint Committee of the Institution of Electrical Engineers and the National Gas Council, would not have accepted membership for research purposes were they as confident of the actual position as the "Electrical Times" writer appears to be—to his own satisfaction. This happens to be a national question; and it cannot be settled by any one individual.

Growth of Individual Consumption.

We have been indulging in a little arithmetical exercise, in connection with the recently issued Board of Trade Returns, to see how the statutory gas undertakings are progressing in the matter of increasing the average consumption of gas per consumer. It can at once be said that the state of things in this regard is highly satisfactory. It is so from two points of view: First and foremost, because an increase in the average consumption per consumer indicates the continued growth of gas in popularity as a domestic and industrial agent; secondly, the increase of consumption through an existing service and meter, and with one account, means that extra business is being obtained without an increase of capital expenditure (as would be required in the case of a new consumer), and without adding to the cost of the accountancy, meter reading, and collection. The basis of comparison is the last five years. In 1921, the statutory gas undertakings had 3,488,099 ordinary consumers and 4,071,220 prepayment ones—together, 7,559,319. The consumption was: Ordinary consumers, 141,768,032,000 c.ft.; and prepayment, 80,285,658,000 c.ft.—a total of 222,053,690,000 c.ft. In 1925, the statutory undertakings had 3,753,837 ordinary consumers, and 4,446,618 prepayment ones—together, 8,200,455. The consumption was: Ordinary consumers, 163,059,081,000 c.ft., and prepayment, 92,747,287,000 c.ft.—a total of 255,806,368,000 c.ft. Thus it is seen that the number of consumers has increased in the five years by 641,136; and the consumption by 33,752,678,000 c.ft. In all these figures, the consumption for public lighting (which has also been enlarged) is excluded. Calculating from these total figures, it is found that the 7,559,319 consumers in 1921 utilized an average of 29,375 c.ft., while the 8,200,455 consumers in 1925 produced an average of 31,194 c.ft., or an increase of 1819 c.ft. Had the average consumption last year been the same as that of 1921, the sales would have amounted to about 15,000,000,000 c.ft. less! What that enormous increase, through the growth of individual consumption, means to the gas industry in economy and strength is beyond exact description.

Carrying our examination further, with the view of ascertaining how the growth of individual consumption is distributed, it is found that, in the five years, the number of ordinary consumers have increased from 3,488,099 to 3,753,837—an advance of 265,738. Their consumption has increased from 141,768,032,000 c.ft. in 1921 to 163,059,081,000 c.ft. in 1925, or a difference of 21,291,049,000 c.ft. The average consumption of the

3,488,099 ordinary consumers in 1921 was 40,643 c.ft., and that of the 3,753,837 consumers in 1925 43,438 c.ft. —an average gain per consumer of 2795 c.ft. Had the average consumption per ordinary consumer in 1925 been the same as in 1921, the 3,753,837 consumers would have burned 152,567,197,191 c.ft., instead of (as they did) 163,059,081,000 c.ft.—10,491,883,809 c.ft. less. There again, we have illustrated the importance of cultivating increased consumption through existing connections.

Coming to the prepayment consumers, these have increased by 375,398 in the five years—the number of meters being 4,071,220 in 1921, and 4,446,618 in 1925. The consumption through these meters in the former year was 80,285,658,000 c.ft., and in the latter year 92,747,287,000 c.ft.—an increase of 12,461,629,000 c.ft. The average consumption of the 4,071,220 prepayment consumers in 1921 was 19,720 c.ft., and of the 4,446,618 consumers in 1925 20,858 c.ft.—an average increase per meter of 1138 c.ft. Had the average consumption of the 4,446,618 prepayment consumers been last year the same as that of the consumers in 1921, the total consumption would have been 87,687,206,960 c.ft., instead of 92,747,287,000 c.ft., or less by 5,060,080,000 c.ft.

Thus we see that the average consumption per ordinary and prepayment meter has risen during the past five years with a cumulative result which must be highly gratifying to the whole industry. The obtaining of new consumers is highly important. But with a field of 8,200,455 consumers at the end of last year, work directed to enlarging individual demand cannot be over-rated; and a potent element in that work is inspection and maintenance.

A Combined Appeal at Bristol.

In our first editorial article this week, information is given which indicates that, whatever happens now, there will be pressure for coal supplies this winter. It therefore behoves everybody to use economically the fuel available, and so respond to the appeal of the Government. The Bristol Gas Company and the Corporation Electricity Department have set a fine example in co-operative endeavour by issuing a joint advertisement, which urges upon the consumers of both commodities the importance of exercising economy in their use. It is signed by Mr. S. E. Halliwell, Secretary and Commercial Manager of the Gas Company, and by Mr. F. W. Prosser, Sales Manager and Secretary of the Corporation Electricity Department. With confidence they say that, given the co-operation of the consumers, their undertakings will be able to maintain supplies. This appeal is indicative of a good understanding between the Gas Company and the Corporation Electricity Department; and if a similar spirit generally prevailed where municipal electricity competes with private gas enterprise, things would be much happier than they are in many cities and towns. Patriotism joins the two Bristol undertakings in this united appeal at a time when the country is pulling through a grave struggle with subversive forces. Into that struggle gas and electricity consumers are asked to throw their individual weight by economizing until normal times are here again. Then they can indulge to the full their desire for consuming gas and electricity. A reference to the Bristol joint effort is made in our news columns.

Tar Surfacing of Roads.

There is a paragraph on this subject in the minutes of the last meeting of the Central Executive Board of the National Gas Council; and it is of an eminently satisfactory character. Our central authorities are unwilling to allow tar to be ousted by bitumen from road use to any considerable extent; and they are working well to recover or make good as far as possible business which has been lost. It is recognized that demonstration is the best form of showing the superior merits of tar. With this in view, a stretch of tar macadam road has been laid in the Balham High Road under the superintendence of Mr. W. E. Cone, Technical Adviser of the British Road Tar Association. Fifteen hours after the completion of the work, traffic was put on the road; and, had it been necessary, it would have been possible to have diverted traffic over the road three hours after it had been laid. It is an excellent stretch of road upon which to demonstrate, seeing that some 24,000 tons of traffic passes over it every day. So far, there is every reason to believe that the experiment will prove a complete success. Unlike many modern roads, an absolutely non-skid surface is provided.

Oil from Coal.

It is reported from Berlin that Prof. Bergius has uttered the warning that it is useless to hope that the distillation of coal of inferior quality will lead to a renewed lease of life in the case of unremunerative mines which have had to be closed down. He is emphatic that no improvement of the present situation in the world coal market can be looked for as a result of chemical methods. Oil produced from coal could not compete with the natural product.

Company Promoters' Wants.

Two freshly issued prospectuses, dated and addressed from County Chambers, Corporation Street, Birmingham, invite subscriptions of capital to the South Midlands and Berkshire Electric Light and Power Company, Ltd., and the Electric Light and Power Contracts Finance Corporation, Ltd. Soame, Brigden, Waring, and Harley are the Directors, and Thompson—of the famous Cannon Street address—the Solicitor, of the former concern; and Soame, Brigden, Harley, and Thompson are the Directors of the latter "enterprise." There is not a word in the documents regarding business done and "profits" made; but there is the usual reliance on big nominal dividends and the cupidity of a section of the public. The South Midlands and Berkshire Company is the old scheme in which the much-advertised Lilliputian Eynsham Gas Company, Ltd., is again used, with the combination of gas and electricity supply, through the virtues of coke for steam-raising. The flimsy grounds offered by these men for inviting capital ought to be sufficient warning to the public. Here we have a proposal to issue 5347 8½ p.ct. preference (cumulative and participating) shares of £1 each at par, with income-tax free up to 4s. 6d. in the pound! Also £3210 7 p.ct. first mortgage debentures in multiples of £10 each at £8 10s., or £85 p.ct.—£15 p.ct. below par for a 7 p.ct. debenture! We would not buy them at a discount of 85 p.ct., let alone 15 p.ct. Among the already allotted share and debenture capital it is noticed that 10,000 ordinary shares of 1s. each have been issued; the amount obtained being £500. Was any premium received on these? If so, where is it? It is also observed that included in the "offer" are £1000 debentures which are "offered" for sale by the Electricity Gas Share Debenture Investment and Guarantee Trust, Ltd., which is another part of the machinery of this promoting band. The prospectus of the Electric Light and Power Contracts Finance Corporation, Ltd., is of the same glowing order in respect of dividends (tax free), with, after paying 8 p.ct. on preference shares and premium notes, participation in the remaining net profits. Provision is to be made towards a note redemption fund by setting aside 25 p.ct. of the balance of net profits; a further 10 p.ct. is to go to the holders of the premium notes; and 65 p.ct. to the holders of the founders' shares. Applicants for preference shares or notes are given the privilege of applying for founders' shares. The Company have a plentiful supply of these—about 8000, so no foolish person need go short. The Company give no information as to business already done, profits made, and dividends declared. Perhaps the promoters are wise in not making disclosure of such matters; they might not assist in attracting more money. The care exercised in not saying too much in these prospectuses is a conspicuous feature.

The Unemployed.

The registers of the Employment Exchanges on Sept. 27 showed an aggregate of 1,527,800 persons requiring work. This is a decrease on the previous week; but only by 3084. The total, however, is 191,645 more than in the corresponding week a year ago. On Oct. 4, the figures were not so good. The total number of persons then recorded on the registers was 1,572,700. This was 44,949 more than the previous week, and 275,072 more than a year ago. The figures do not include those who ceased work in the coal-mining industry.

PERSONAL.

Mr. A. T. GREEN, A.Inst.P., is the President of the Stoke-on-Trent Association of Engineers for the present session. He has been for the past six years Research Physicist to the British Refractories Research Association, working under Dr. Mellor, the Director of Research for that Association.

After forty-six years' service with the Birmingham Corporation Gas Department, Mr. F. W. DEANE, who has been Superintendent of the Wednesbury Branch for twenty years, officially retires from office at the end of this month. The whole of his career has been spent with the Birmingham Corporation.

Mr. WORTLEY PEARSON LOVELL, Secretary and Assistant Manager of the Leicester Corporation Gas Department, has just completed fifty years' service. He was engaged at the works before they were taken over by the Corporation. The Chairman of the Gas Committee (Councillor Hilton), at the last meeting, warmly congratulated him on his fine record.

Mr. HAROLD B. KENDRICK (son of Mr. H. Kendrick, Engineer and Manager to the late Stretford Gas Company) has been appointed Assistant at Carlisle Gas-Works, under Mr. J. E. Blundell, in succession to Mr. J. A. Harrison, who recently resigned. Mr. Kendrick was educated at the Manchester Grammar School, and the Manchester College of Technology, where he passed in the Engineering and Fuels Courses; while he also holds a first-class in the Gas Manufacture Examination of the City and Guilds of London Institute. He entered the service of West's Gas Improvement Company, Ltd., in February, 1914, and passed through the firm's workshops, drawing office, &c. During the past six years he has been engaged in the supervision and erection of vertical retorts for the firm at a number of gas-works. Mr. Kendrick served during the war on the Salonica Front and in France, where he was wounded.

OBITUARY.

Mr. CHARLES EDWARD NUTHALL, who was found dead in bed at his residence, was Chairman of the Kingston-on-Thames Gas Company. He was 84 years of age, and had been medically attended for heart trouble.

The death has occurred, after a long illness, of Mr. FRED HELLIWELL PICKLES, Manager of the Kildwick Parish Gas Company for the past 36 years, and formerly Assistant Manager at the Todmorden Council Gas-Works. Mr. Pickles, who was 60 years of age, was formerly Secretary of the West Yorkshire Commercial Section of Gas Engineers. He leaves a widow, one son, and a daughter.

The death occurred of Mr. J. E. C. LORD, the Managing Director of Messrs. J. E. C. Lord (Manchester), Ltd., at his residence at St. Annes-on-Sea, on Friday, Oct. 8, at the age of 66 years. Mr. Lord commenced business about forty years ago, and developed the large tar distilling and chemical works at Manchester and Liverpool; the business subsequently being converted into a limited company. Mr. Lord's activities were many; and he was one of the pioneers in the shipment of creosote in bulk from this country.

We regret to announce the death of Mr. AMBROSE PETROCOKINO, the proprietor of Clarks Lead and Colour Works, Reading. He died on Oct. 10, aged 62 years. He was a great traveller, having gone round the world three times. He also took a trip from the source to the mouth of the River Amazon, and was the only white man that had attempted it alone. He wrote a very interesting book on this trip called "Through the Andes." He was a thorough soldier, as he served during the whole of the South African War, and was one of the first to join up during the last terrible war. His final position in the latter war was Deputy Military Governor of Baghdad. We are pleased to state that the old established firm of Clarks, of Reading, now 95 years old, will still be carried on with the same staff, under the General Manager, Mr. T. W. Gyngell, who has been with the firm for over 30 years. Mr. Petrocokino was a very generous man, and many poor folk will miss him. He was loved by every member of the firm, and there was not one absent from his funeral, which took place at Purley, near Reading, on Oct. 13.

EVENING STAR GOLFING SOCIETY.

The famous Sandy Lodge course was the links selected for the Autumn Meeting of the Evening Star Golfing Society last Wednesday. Fifteen members were able to play, and were duly thankful for their good fortune. The sun shone all day; and the course, of which it is impossible to criticize a single hole, was in excellent condition—a chronic state, we believe. True, there was a high wind, which meant a long battle "home" (with three bogey 6 holes); but the scores were the more creditable for this.

The morning Medal round was returned for the prize of a baffy given by Bro. E. J. Fussell; second prize, the Society's spoon. Bro. Frank Keep won the former, with 83 (96–13); Bro. E. J. Fussell secured the spoon with 85 (100–15).

The home holes of the morning round and the outward half after lunch were returned for Bogey prizes under handicap. The prizes were a handsome silver cigarette box, offered by W. Bro. Packham, and the Society's spoon. For these, Bros. E. J. Davison, A. R. Barford, and C. A. King tied with 4 down; and the throw of a coin gave the cigarette box to Bro. Barford and the spoon to Bro. King.

After tea a meeting was held with W. Bro. Broadberry in the chair. After he had distributed the prizes, and hearty thanks had been passed to W. Bro. Packham and Bro. Fussell for their generosity in presenting the prizes, the members expressed their sympathy with W. Bro. Packham, who was unable to attend owing to a family bereavement. Cordial appreciation was also voiced of W. Bro. Reg. Foster's kindness in obtaining permission for the Society's accommodation at Sandy Lodge. Thereafter, the Hon. Secretary, W. Bro. A. H. Henry, was re-elected, to the gratification of all; and a vote of thanks to the Chairman closed a delightful meeting.

FORTHCOMING ENGAGEMENTS.

Oct. 21.—MIDLAND JUNIOR GAS ASSOCIATION.—Meeting at Birmingham.
Oct. 21.—MURDOCH LODGE No. 3480.—Meeting.
Oct. 23.—SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).—Visit to the Granton Gas-Works, Edinburgh.
Oct. 23.—YORKSHIRE JUNIOR GAS ASSOCIATION.—Annual general meeting at Leeds University. Address by Mr. Ralph Halkett, of Sheffield.
Oct. 25, 26, 27.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual conference at Newcastle-upon-Tyne.
Oct. 26.—ILLUMINATING ENGINEERING SOCIETY.—Meeting at the "E.L.M.A." Service Bureau, Savoy Street, W.C.
Oct. 29.—LONDON AND SOUTHERN DISTRICT JUNIOR GAS ASSOCIATION.—Meeting at the Westminster Technical Institute. Presidential Address by Mr. A. Broadbent.
Nov. 3.—INSTITUTION OF CHEMICAL ENGINEERS.—Annual presidential reception at the Gallery of the Royal Society of Painters in Water Colours, 5A, Pall Mall East, S.W. 1, at 8.30.
Nov. 6.—SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).—Meeting at the Royal Technical College, Glasgow.
Nov. 9.—NATIONAL GAS COUNCIL.—Meeting.
Nov. 9.—FEDERATION OF GAS EMPLOYERS.—Meeting.
Nov. 11.—SOCIETY OF BRITISH GAS INDUSTRIES.—Autumn general meeting at the Hotel Cecil, under the presidency of Viscount Ednam, M.C.
Nov. 12.—SOUTHERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS.—Meeting at the Hotel Cecil.
Nov. 19.—EFFICIENCY CLUB.—Discussion on the Relative Fields and Merits of Gas and Electricity.—7.30 for 8. Vernon House, Park Place, St. James' Street, S.W.
Dec. 7-8.—INSTITUTION OF FUEL TECHNOLOGY.—Meeting.
Feb. 16.—"B.C.G.A." MIDLAND DISTRICT CONFERENCE.

INSTITUTION OF GAS ENGINEERS.

Nov. 9.—Advisory Committee on Education.
Nov. 10.—Emergency Committee, Finance Committee.

Discussion on Gas and Electricity.—The relative fields and merits of gas and electricity will be discussed at a meeting of the Efficiency Club, at Vernon House, Park Place, St. James's Street, S.W., on Friday, Nov. 19th, at 7.30 for 8. Among the principal speakers is to be Mr. F. W. Goodenough, C.B.E. Admission is to be free (no tickets required).

Illuminating Engineering Society.—The opening meeting of the Society will be held at the "E.L.M.A." Lighting Service Bureau, 15, Savoy Street, W.C., on Tuesday, Oct. 26, at 6.30 p.m., when reports on progress during the vacation, and on developments in electric lamps and lighting appliances, will be presented, and some interesting novelties (developments in railway lighting, new forms of neon signs, reflectors, and lighting units, photometric instruments, &c.) will be shown and described.

Atmospheric Pollution.—Dr. J. S. Owens, Superintendent to the Advisory Committee on Atmospheric Pollution, will lecture on "Some Aspects of Atmospheric Pollution," at a public meeting in the Birmingham University, on Nov. 3, under the auspices of the local section of the British Association of Chemists.

"Poppy Day."—Earl Haig has issued a warning to the public to be on their guard against accepting any but the genuine poppies sold for the benefit of distressed ex-Service men and their dependants on Armistice Day. It is evident that preparations have been made—sometimes by foreign firms—to flood the streets and florists' shops with artificial poppies made solely for private gain. It is an affront to public sentiment, which demands that the poppies made by the disabled shall be a means of assisting their distressed comrades. The genuine poppy bears in its centre the words "Haig's Fund."

ELECTRICITY SUPPLY MEMORANDA.

A Little Comfort.

We have in business hours been complying with the request of the Gas Company to economize in the consumption of gas, and during the recent cold weather have been working without gas-fires. So much the worse for the revenue of the Gas Company; and, we hope, so much the better for our account, despite the temporary increase in price. But occasionally, by way of a treat, we have been indulging in a little fire in the early morning and on retiring to bed—this in another gas-supply district. The bedroom fire is one which can consume, if required, 30 c.ft. of gas per hour; and of the heat developed by that volume of 500 B.Th.U. gas, some 11,250 B.Th.U. are imparted to the room, and add distinctly to its comfort. The gas undertaking produces (excluding water gas) about 72 therms per ton of coal carbonized, or 3214 B.Th.U. per lb. Thus 4·6 lbs. of coal are handled to supply the 15,000 B.Th.U.; but about 2 lbs. of coke are returned to the fuel market, together with tar and other products. To give to the room 11,250 B.Th.U., would require 3·3 units of electricity; and as approximately an average of 3 lbs. of coal is used at the station per unit generated (not sold), the total consumption of coal for the 3·3 units would be round about 10 lbs. In these circumstances, we may be pardoned for indulging in a little comfort from our bedroom gas-fire—at any rate, our crime in these days of (true, a rifted) stoppage in coal production is not so great as that of a neighbour who uses an electric radiator in his room. May he be forgiven his prodigality during these difficult fuel times!

Domestic Heating Season.

Mention has previously been made of the rush that the coal stoppage has occasioned for gas-fires; the electricity industry says there has also been a decent elevation of demand for electric fires. Our rivals are, apart from the "Wiring of Britain's Homes Campaign," bustling about, as is usually the case at this season of the year, seeking to develop the heating branch; but at heart they are not so enamoured of it as they are of the cooking business, which is an all-the-year-round one, and does not over-lap the winter's lighting load with the same persistency and effect as the heating load. A writer in the "Electrical Times"—E. R. Morton—discussing the subject of the marketing of electric fires, while stating that reduced power rates have contributed to the popularity of the electric fire, confesses that "really economical rates are so infrequent in this country, that the convenience of electric heating has contributed more than anything else to the popularity." Convenience is not a greater attribute of the electric fire than of a gas-fire; so that it is merely a matter of fancy which form of heating is adopted, if we have regard to convenience only. But the greatest factor in popularity is economy; and it is because of this that the popularity of the gas-fire, as a readily applied labour-saving agent, so far transcends that of the electric fire. But what are "really economical rates" for electricity for heating purposes? "Economical rates" must have relation to the duty rendered; and the duty for a given sum places electricity in the lowest position in the scale. It is claimed that the range of electric fires is "exceptionally wide." Why "exceptionally?" The range of gas-fires is also wide; and the variety offers types applicable to all situations. However, we do not dispute that in some electricity showrooms an attractive range of electric fires can be seen. Mr. Morton also alludes to the old difficulties through the premature failure of heating elements, and he assures his readers that this is now an exception. At the same time, when fires are being offered by new manufacturers, he suggests that buyers should satisfy themselves as to the source of supply of the heating wire. A big stumbling-block to large sales has been the fact that so many electrical retailers seem to believe that their customers want something cheap. In the view of Mr. Morton, many orders have been lost through inferior fires; and he expresses the opinion that the soundest businesses are built-up by the help of quality. Another good piece of advice is that, before making recommendation, salesmen should, if possible, see the room in which a fire is going to be fixed. This will give the customer more confidence in the type finally selected. Another suggestion is that the wise salesman will never sell a fire that is going to be too expensive to run. In this there comes a difficulty. From intercourse with people who have used electric fires, we learn that usually they are recommended to instal a fire which is too small for the task it has to perform in the coldest season. This has done much to give electric fires a bad name. But, of course, the supreme barrier to a big business in electric fires has been the running cost when they are large enough to give sufficient heat in the coldest weather. The necessary capacity of a fire has (apart from atmospheric temperature) relation also to the structural characteristics of a room. Some rooms require a greater input of heat than others to keep them at a comfortable and equable temperature.

Fuel and Electricity.

As previously mentioned, the electricity undertakings of the country are in the same boat as gas undertakings in the matter of heavy increases in the cost of fuel for maintaining their supplies. At a recent meeting of the Sheffield City Council, it was stated by Councillor Tummon that the reserve fund of the Electricity Department, amounting to £43,000, has been entirely wiped-out, and that they have incurred losses to the tune of another £40,000 for fuel. Instead of fuel costing 15s. a ton, it is costing something like 50s. Due to this, a proposal was made that the price of electricity should be advanced. There was opposition; the Committee being urged to carry on for another month without raising the price. To give effect to this, an amendment to the Committee's recommendation was submitted. The Committee tried hard to protect their proposal. Alderman Styring stated that altogether some £80,000 had been paid in increased fuel costs; that the debit balance to the end of August was £63,000; and that the increase in price would produce about £60,000. It is calculated by Councillor Tummon that, by the end of the year, the Committee will be some £120,000 to the bad. Notwithstanding this doleful condition of things, the amendment was carried, and so the increase is deferred. This policy is highly questionable, as it would be far better to spread the heavy extra cost of generating electricity over the period to which it specifically applies rather than accumulate the losses, and then have to come upon the consumers for the additional money.

Mishaps.

It was recently stated, on the authority of a Liverpool newspaper, that a fire which had occurred at a local church was attributed to the fusing of an electric wire. Messrs. John Hunter & Co. have informed the paper concerned that, as they were responsible for the installation of the wiring some six years ago, they immediately, for the sake of their reputation, made a very minute investigation; and the result is that they can say conclusively that the fire was not caused by the wiring. As it is possible for Messrs. Hunter & Co. to make such a categorical assertion, they should also be in the position to state equally "conclusively" what was the cause of the fire. We do not suggest that they are wrong; but, if they cannot say what originated it, it would be of considerable technical interest to have information from them regarding the grounds on which they are able "conclusively" to say that the electric wiring had nothing whatever to do with the outbreak. While mentioning this, we notice in the "Torquay Herald and Express" a report headed "Fusing of Wire causes Fire at Paignton Bank." The trouble occurred on Oct. 10, and originated in the kitchen of the premises attached to Lloyd's Bank in the Torquay Road, Preston; the wire which is supposed to have fused being situated under the floor of the kitchen. During the big gale at the beginning of this month, an overhead electric cable which crosses a field at Skelton, Cleveland, was blown down; and two young horses were electrocuted. Just previously, Sir Alan Cobham, in making a flight to Manchester, had to make a hurried descent, owing to the prevailing high wind, and, in doing so, had a narrow escape from an unfriendly encounter between his machine and overhead cables. Aerial transport will lose some of its charms when the network of transmission cables is installed under the Government electricity scheme.

Premier on the Bill.

On the part of the Prime Minister, there is a devotion to, and confidence in, the Electricity Commissioners, which must be a source of great pride to those gentlemen. We envy them. So great is the devotion and confidence that nothing can shake Mr. Baldwin's belief that all they say concerning the electricity supply scheme will come to pass. The contrary opinions of equally competent men, and more of them, within the electricity industry have no modifying effect upon, nor do they raise doubts in the minds of, the Premier and his colleagues in the Cabinet. In his speech at the conference of Conservative and Unionist Associations at Scarborough, he said that misconceptions seem still to prevail in some quarters; and it is necessary to explain that the Bill does not provide for nationalization, and the State is not undertaking the supply of electricity to consumers. There is none so blind as he who will not see. There are conditions in industry which, if left alone, keep it remote from nationalization; those conditions can be changed by legislation in a way which eases the path, when the time is opportune, for those who believe in nationalization. The Electricity Supply Bill distinctly makes better provision for the nationalization of the industry than anything that has been previously done. We have heard over and over again the soul-agitating announcement that Great Britain is far behind her competitors in the production of cheaply generated electricity, and in consequence its use for power purposes is far less than half what it should be. That is the sort of statement which one expects to hear from some one who

knows nothing about the subject. Where is it that electricity is supplied abroad at a cheaper rate for power purposes than is the case in our great industrial areas? The Premier is dreaming, or is merely reciting what he has been told.

Hypothetical Lower Prices.

Mr. Baldwin looks to the saving in capital charges and the improved load factor to enable current to be supplied to authorized undertakings at less than half the average present cost, and at a lower price than even the best installation can produce at to-day. Does the Prime Minister mean at half the present average cost for the whole country, or half the present average cost in each large industrial centre? If he means the latter, then all we can say is that Mr. Baldwin has been mischievously misled; if he means the former, then we should not be surprised if the average present cost in the big industrial centres is raised through the operation of the scheme, instead of halved. In speaking of capital charges, he seems to overlook transmission and transforming costs and losses, interconnection charges, and those relating to the standardization of frequency. We are afraid Mr. Baldwin has so much to engage his attention that he cannot make a complete study of these matters, and their full bearing on the Government scheme. He relies on the expert advisers, and passes by the expert critics. The former have told him that the saving in capital expenditure the next few years will be more than sufficient to pay for the whole cost of the transmission lines; and, at the end of that period, the annual saving in cost of generation will be approximately eleven millions a year. It would be interesting to technicians to learn how the saving in capital expenditure has been calculated, and to have the word "period" defined in terms of years; also to learn whether the saving will cover all costs of maintenance and renewal. That aspect of the matter has importance. There is much that is indefinite and slipshod in the manner of politically dealing with this scheme, and this cannot give any confidence—except perhaps to the politicians who are not technicians. However, assuming the generation saving is eleven millions a year, it has to carry all the additional expenditure outside the costs of generation. When that has been discharged, how much will there be left for reducing the present costs to the consumers? But that is not the end—the reduction "should," so the Premier says, render it possible to supply many rural districts which are now outside the areas of supply. Miracles cannot be achieved even by legislation. But the Government go on happy in the conviction that all the critics are wrong, and that the only people who can be right are the Electricity Commissioners.

A New Electricity Commissioner.

Mr. S. L. Pearce, C.B.E., formerly the Electrical Engineer of the Manchester Corporation, has been an Electricity Commissioner for a very short time. He has accepted the position of Engineer-in-Chief to the London Power Company, upon the retirement of Sir Alexander Kennedy. Mr. T. Wilmshurst, of Derby, is to become the new Commissioner. The changes will take place on Nov. 1.

"COMPETITION POINTS FOR GAS SALESMEN."*

Review of Second Edition.

By W. M. MASON, Manager of the "B.C.G.A."

A new edition of a book that has been at the elbow of most keen gas salesmen will be welcomed and appreciated by an increasing number of men in the industry. The "B.C.G.A." copy of the first edition (which, it is interesting to recall, was issued practically at the same time as the Association emerged into active life) is well-thumbed, and copiously pencil marked—surely the sincerest compliment it is possible to pay a book of the kind.

Since the first edition a marked change has been wrought in the policy and outlook of the industry. Education is now one of the important planks in the Institution platform; and the demand for knowledge, evidenced not only in actual attendance at classes, but in the time devoted to attending Junior Associations and Salesmen's Circles, is clear proof that a splendid crop of keen and ambitious men are thirsting for that knowledge and education in their own business which means power and brings success. To all such, the second edition of "Competition Points" is most heartily recommended. Here is a book, not merely theorizing about generalities (although good practice will not come from bad theory), but crammed full of concise, accurate, clearly and fairly stated matter. The salesman is tempted by the very strength of the gas proposition to overstate his case; in this book the fault is avoided.

The publication is really a new book, with the old title, having been practically rewritten, and brought fully up to date. It frankly deals in the plainest manner, and without unnecessary frills, with gas and electricity in competition. About one-third of the new book is devoted to lighting; and, without attempting to deal with individual types of burners, gives a vast amount of information. Some excellent illustrations of outdoor lighting at Wembley will, to many gas salesmen in all parts of the country, suggest happy recollections of the great united gas exhibit. Other excellent illustrations are of the Scarborough foreshore, where a magnificent display of outdoor lighting is installed, and of a useful installation of gas at New Street Station, Birmingham.

Some idea of the comprehensive manner in which the book is compiled will be gathered from the fact that in the Lighting Section alone over fifty sub-sections deal with various points—such as ultra-violet rays and eyesight, comparative costs of lighting, fogs and light penetration, flash signs, hygienic aspects, and so forth.

The book is divided into seven sections. The first deals in a general way with efficiencies and social aspects, with particular reference to smoke abatement. Other sections, in addition to the very important part on lighting, contain an invaluable fund of information relative to heating by gas and coke, cooking and water heating, with many figures and details of comparative and other tests. No lady demonstrator in the industry should be without the book—for this section alone. Section V.—Gas for Power—is another particularly useful part, containing figures and comparisons to strengthen a salesman's hands in countering competition—not only from electricity, but from suction gas and oil engines.

The remaining two sections deal with industrial operations—an increasingly important development regarding which the alert salesman needs the fullest information—Heat Treatment of Metals, Furnaces, Fish Frying, Fire Risks, &c.

The book closes on a crescendo note of optimism—"A Fact or Two" indicates the enormous potentialities of the gas industry for public utility, and suggests the great part the gas salesman—and every member of the organization, from the chairman and the general manager, the shareholder, and the gas worker, to the humblest or "cockiest" member of the staff, ought to be a salesman—has to play in pushing the old gas chariot along in public and national service.

The "GAS JOURNAL," which has always taken a leading and helpful part in advocating the sales development side of the industry, is to be congratulated on another fine piece of constructive usefulness.

* "Competition Points for Gas Salesmen" (Second Edition), Revised and brought up to date by ARTHUR F. BEZANT and NORMAN S. SMITH, B.Sc. Price 7s. 6d., post free. London: Walter King, Ltd., 11, Bolt Court, Fleet Street, E.C. 4.

GAS DRIVEN BOOSTERS FOR SYDNEY.

Michell Patent Crankless Type.

An order has been received by Messrs. George Waller & Son, Ltd., of Stroud, from the Australian Gas Light Company, of Sydney, for seven gas-engine driven boosting sets, each to deal with 500,000 c.ft. of gas per hour, and deliver it at a pressure of 7·2 lbs. per sq.in.

The boosters are to be of the Michell patent crankless type, having twelve cylinders, arranged in two sets of six, each 12 in. bore and 9½ in. stroke, and are to run at 750 R.P.M. when delivering 500,000 c.ft. of gas an hour. The cylinders will be double-acting, and operate on a normal compressor cycle. The gas inlet and delivery of each booster will be through its base; and the valves will be of the rotary type, mounted directly on the main shaft. Each valve serves for both inlet and delivery purposes; and there is to be one for each set of six cylinders.

The gas engines, which are also to be of the Michell patent crankless type, and are being made by the National Gas Engine Company, of Ashton-under-Lyne, are to have eight cylinders of 8¼ in. bore and 9 in. stroke, and are to be of 280 normal brake horse-power. The engines will be direct coupled to the boosters. The cylinders will be arranged in two sets of four, and will be single acting. As has already been said, the normal speed will be 750 R.P.M. when the booster is delivering its rated output. The speed range of the engines is from 800 R.P.M. down to 150 R.P.M., and the maximum brake horse-power obtainable is approximately 360. Forced lubrication is to be fitted to both engine and booster, each having its own independent system. Starting is effected by means of a small three-cylinder air-cooled crankless gas engine.

A full illustrated description of the Michell crankless gas engine and booster will be found in the "JOURNAL" for April 1, 1925 (p. 47).

NATIONAL GAS COUNCIL.

Meeting of the Central Executive Board.

A meeting of the Central Executive Board of the Council was held at 28, Grosvenor Gardens, on Tuesday, Oct. 12—Mr. D. Milne Watson (President) in the chair.

Before the business of the meeting commenced, the President announced with deep regret the death of Mr. F. A. Pye, General Manager and Secretary of the Chester United Gas Company. The President said that Mr. Pye had been connected with the Council since 1916. He had a high sense of duty and never spared himself in working for the benefit of the gas industry.

A vote of sympathy with Mr. Pye's widow and with his colleagues was passed in silence; all the members standing.

It was reported that Mr. J. W. McLusky would in future be a member of the Board, on the nomination of the Institution of Gas Engineers. It was also arranged that Mr. W. E. Whyte, of Lanarkshire, should be co-opted a representative for Scotland on the Central Executive Board.

Coal Position.

A discussion took place as to the communications which had been sent out by the Council to gas undertakings, asking them to circularize their consumers, suggesting economy in the consumption of gas now that Summer Time was at an end, to enable gas undertakings to continue their supplies of gas to the public. Reports were received with regard to the steps which had been taken by various gas undertakings to comply with the Council's request.

Communications which have been received from gas undertakings and from Commercial Sections of District Institutions of Gas Engineers and Managers with regard to the inability of gas undertakings to obtain supplies of English coal which are now being raised, together with correspondence which has taken place between the Council and the Mines Department on this matter, were submitted. Discussion also took place as to the position of gas undertakings with regard to deliveries of coal under contracts.

Gas (Amending Orders) Rules.

It was reported that a model form of notice of application for Gas Amending Orders for insertion in the "London Gazette" and the local Press had been agreed upon.

It was hoped that a standard notice would have the effect of obviating discrepancies and the consequent necessity of re-advertising, and so preventing delays.

Hastings Electricity (Extension) Order.

It was reported that the Hastings Corporation have recently promoted a Special Order for the purpose of adding to their district a further very large area of supply. The Hastings and St. Leonards Gas Company objected to the Special Order, and asked for the insertion of a clause on the lines of the "Northumberland" Clause, to prevent the Electricity Undertaking being subsidized out of the rates.

The Ministry of Transport held an inquiry into the question on Sept. 27, when a representative of the Council gave evidence on behalf of the Gas Company, submitting that a clause for the purpose of protecting the Gas Company against rate-aided competition should be inserted in the Draft Order under inquiry. The result of the inquiry has not yet been made known.

Tar.

It was reported that an experimental stretch of tar macadam road had been put down in the Balham High Road, under the superintendence of Mr. W. E. Cone, the Technical Adviser of the British Road Tar Association. Traffic was put on to this road 15 hours after its completion; and had it been necessary, it would have been possible to divert traffic over the road three hours after it had been laid. The amount of traffic passing over the road was extremely heavy—namely, 24,000 tons per day—and so far there appeared to be every reason to believe that the experiment would prove a complete success. The road, unlike many other modern roads, provides an absolutely non-skid surface.

Central Heating by Gas.—Recently the occupant of a medium-sized building in Westminster found that by using gas boilers in place of a solid fuel boiler for central heating, it was possible to bring into use two basement rooms worth at least £50 a year which could not be used previously owing to the dirt created by the solid fuel boiler. The total bill for gas for central heating for a year was just under £40, so that in effect the owner now heats the premises for nothing, and is actually £10 in pocket—for the two rooms needed had in any case to be somewhere in the neighbourhood. This and several other striking examples showing the advantages of gas for central heating in the labour-saving house, the small suite of offices, the warehouse, and the store are contained in the current issue (No. 151) of "A Thousand-and-One Uses for Gas."

TRADE UNION LAW.

That many of the trade unions of this country have become more or less political machines, and their legitimate functions have been forced into second place, did not need the demonstration that has been made this year to attest the fact. It has been well known for long that men of advanced political ideas have wormed their way into several of the unions, have honeycombed them with their pernicious teachings, and have obtained control of their organized power. The position is not to the liking of many trade unionists, who object to their organizations being diverted from their proper functions, and utilized for subversive purposes, and for injuring the national interests; who also object to being made the tools of these men as they were during the first two weeks in May—with what result? Humiliation for the trade unions, with the non-participating majority of the nation resolute in showing that they were not going to be governed by any but their constitutionally elected representatives. It is clear from what has transpired this year that the law regarding trade unions requires strengthening, so as to place more power in the hands of the individual members of the unions; to protect them against being the victims of men in whose doctrines and methods they have no belief; and to assure to them personal liberty without exposing them to the vengeance of the extremists, whose dictation they decline to accept.

It matters not which political party brings about a change in the law which will protect those who believe in the trade unions being kept free from political activities while having their industrial rights fully maintained. The question has been under discussion at the annual conference of the National Union of Conservative and Unionist Associations at Scarborough. On the occasion, there were trade unionists—men of long standing in the movement—who spoke of the oppression from which they suffer through the activities of so-called "leaders" who can only think in terms of their Socialistic and Communistic tenets. From these trade union speakers came an appeal for the repeal of the Trades Disputes Act of 1906, and of the Act of 1913 with regard to the political levy. It is, of course, not right that industrial affairs should be chained to political and revolutionary principles and acts, and that men to whom these things are repugnant should be made to contribute to their support and promotion. At the conference this resolution was passed:

> That in view of the experience afforded by the general strike of May, 1926, this conference is of opinion that the present state of the law relating to trades unions constitutes a menace to national security, whilst depriving the individual of political and industrial freedom, and that this conference therefore urges the Government to introduce legislation to amend the law:
>
> 1. To make illegal any strike called without a secret ballot of the members of the trades union affected.
> 2. To increase the security of the individual worker against victimization and intimidation on account of his political beliefs.
> 3. To make mass picketing and the picketing of a man's private residence illegal.
> 4. To require the national accounts of trades unions to be audited by certified accountants.

Among the speakers on the resolution was Sir Leslie Scott, who stated that legislation was wanted to declare in plain language that a strike the effect of which is to dictate to the Government of the country, or to hold up the community, is illegal by the law of the country. The nation is entitled also to say that "we will not have a strike in the case of essential public services—such as lighting, water, and transport on which the life of the nation depends, until there has been an attempt at conciliation by some conciliation machinery."

Another resolution was passed, calling for the enactment in a Bill dealing with trade unions of a provision which, while admitting that it is perfectly legitimate to call attention to the advantages of trade unionism, would cause it to be unlawful for anyone to make membership of a trade union a condition of employment.

In the course of a speech to the conference, the Prime Minister stated that, as soon as the Government have completed their examination of the subject, they will prepare a Bill, dealing with trade union law. He believes that many trade unionists have had enough of the sort of thing that has been witnessed this year; and that there is to-day a greater desire to get together, and to work together for more prosperity, which is the only road to increased individual reward.

It is understood that a Bill is already on the stocks, and is in an advanced condition, but that two things may be dismissed. One is that the secret ballot will be ruled-out as being impracticable; the other, that there is no immediate intention to deal with the political levy. There cannot be either approval or criticism until it is seen exactly (when the Bill is published) what are the intentions of the Government. This is not a party matter; it is a national one. It is not expected that the attention of Parliament can be given to the Bill before next year.

Road Tar Conference.—Mr. Michael Barash, M.Sc. (Tech.), will be giving a paper on "The Production of Road Board Tar from Vertical Retorts" at the Tar Conference at Manchester on Nov. 16.

NEW SHOWROOMS OF THE GAS LIGHT AND COKE COMPANY.

Magnificent Premises in Church Street, Kensington.

"The excellence of every art must consist in the complete accomplishment of its purpose." This phrase, which appears over the portals of the Victoria and Albert Museum, completely vindicates our statement that the new Church Street Showrooms of the Gas Light and Coke Company, which were declared open yesterday by H.R.H. the Duchess of York, are an excellent work of art. The exterior of the building is arresting in its dignity and simplicity of line; the interior is splendidly designed to show to the best possible advantage the many different types of gas and coke appliances displayed.

A Fine Achievement.

Mr. Austen Hall, F.R.I.B.A., was responsible for the design, arrangement, and erection of the premises, and Mr. Walter J. Tapper, A.R.A., F.R.I.B.A., for their internal decoration and furnishing; and they and all those who have collaborated in the work are to be heartily congratulated on a remarkably fine achievement. Moreover, it is an achievement not merely for the Gas Light and Coke Company, but for the whole gas industry. All who see the building—and every day many thousands will see it—will have their interest in the industry quickened; while those who actually inspect the apparatus exhibited will have their appreciation of the value of gas and coke enormously strengthened.

Excellent Window Frontage.

The beauty of the building and the commanding site it occupies can be seen in the photograph which we reproduce. The elevations are carried out in the manner with which Kensington has become associated. The nearness of Kensington Palace suggested the suitability of a design on the lines known as English Renaissance.

The materials are red brick, with Portland stone dressings and cornice. The roof is of Westmorland slates. The sash window is generally used in the Royal Borough, and gives a somewhat domestic character to the building. This is in keeping with the simple lines adopted, as well as with the use of the showrooms for a large amount of domestic appliances. It is essentially the centre of domestic science and economy for Kensington, and has an intimate character, rather than that of an office building as usually understood.

No chimneys are visible. The products from the gas fires are removed by flues smaller than those necessary for smoke-producing fires, and the outlets from these flues are hidden. The main frontage and the imposing entrance face Church Street, Kensington. Charm is added to the entrance by having on each side a window in which is displayed in cut-glass vessels a variety of the many bye-products of coal carbonization—dyes, ammonium sulphate, and so on. The remainder of the frontage is taken up by two large and two smaller window exhibits. In the large displays two completely fitted kitchens are shown. One is an all-gas kitchen containing circulator, cooker, fire, and drying cabinet; the other is a gas-and-coke kitchen in which coke is employed for water-heating and gas for cooking and heating purposes. Needless to say, both these exhibits are arranged in a most attractive manner. They demonstrate to the housewife schemes which combine highly attractive appearance with cleanliness, efficiency, and undoubted economy.

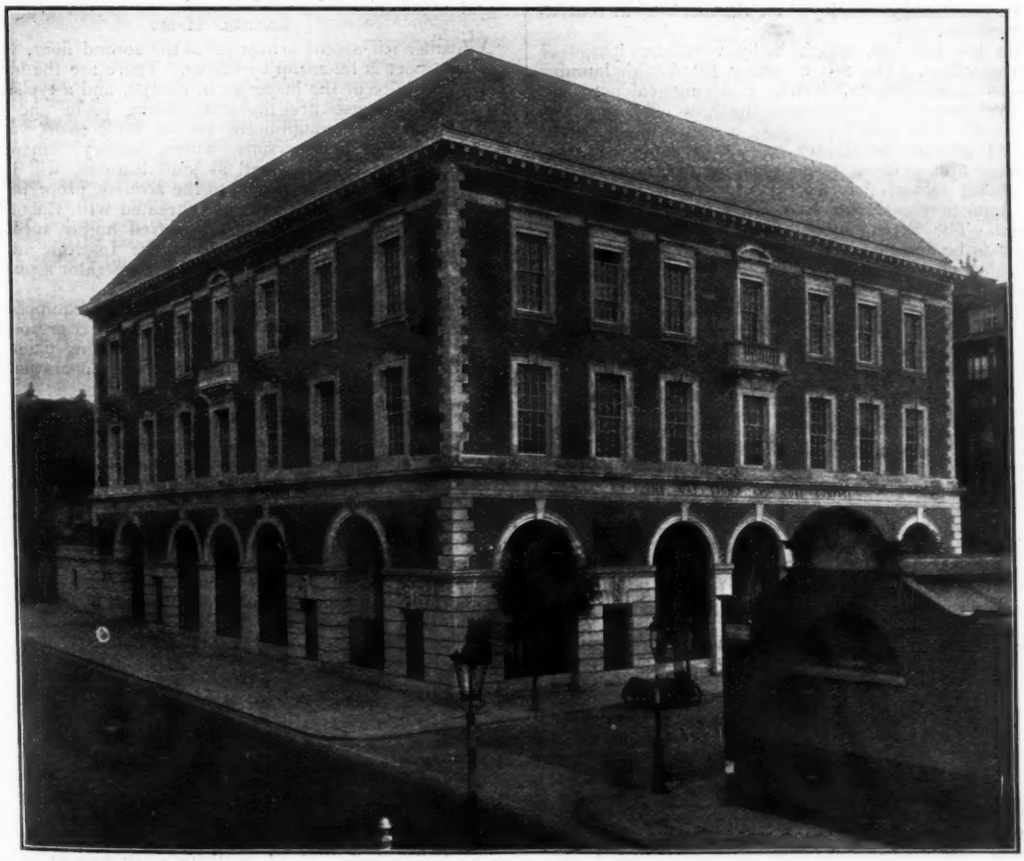
In the smaller windows there are respectively a gas fire setting and an elaborate tripod fitted with about eighteen burners complete with delightful silk shades. These burners will be constantly in action throughout the day, and in themselves constitute a most effective advertisement of gas lighting. The illumination of the windows is really excellent. In addition to 1200 c.p. ceiling lamps designed by Mr. Tapper and fitted with Sugg low-pressure burners, each window is fitted with directive flood lighting. And then, of course, the effect is enhanced by the general exterior illumination. It must be mentioned that all the lights are switch controlled.

As can be seen from the photograph to which reference has already been made, there is also an extensive window frontage at right angles to Church Street.

There are four floors in the building, which are served by two passenger lifts and a hydraulic lift for goods, &c. We propose to deal with these floors in turn, commencing with the ground floor, which is chiefly taken up by the reception hall.

Art and Lighting Fittings.

Having passed through the inviting portals of the new premises, one finds oneself in the main reception hall, 90 ft. by 28 ft., which is lofty, remarkably well lighted naturally and equally well illuminated artificially, and altogether redolent of good taste and quiet charm. The lighting fittings in this hall—and this applies to lighting fittings throughout the building—will unquestionably be a revelation to those who imagine that fine art cannot be incorporated in such fixtures. These particular fittings have been specially designed for their purpose by Mr. Tapper; and the results demonstrate in most effective manner that gas does not lag behind any other form of illuminant with regard either to efficiency or to artistic effect. "Ah yes," we have heard people say, "but gas lighting fittings are clumsy." The answer to any statement such as this is to be found in the



THE NEW OFFICES AND SHOWROOMS OF THE GAS LIGHT AND COKE COMPANY, CHURCH STREET, KENSINGTON.

new showrooms of the Gas Light and Coke Company. The main lighting of the reception hall is by seven suspended semi-indirect lamps designed by Mr. Tapper, executed by Messrs. Bainbridge Reynolds, and fitted with Sugg burners; and there is auxiliary lighting by beautiful standards fitted with Evered's latest pattern candle burners.

It is here that gas fires in elaborate settings are exhibited. These fires are so positioned as to face the window frontage at right angles to Church Street; and above each setting is a cabinet containing artistic pottery made by artists in Chelsea and elsewhere, who have employed gas muffle furnaces to attain their excellent results. These cabinets, then, besides being highly decorative, have a definite advertising value.

The fires themselves are the latest and best products of all the leading makers, and include copper and pewter models sheathed in solid metal. No useful purpose could be served by singling-out for special reference any particular design. Each has its particular appeal, and choice rests not upon difference in efficiency, but upon personal taste. Regarding the latter point, there is sufficient variety to satisfy all.

Concealed Gas Connections.

We must emphasize the fact that all the gas connections to these fires, and, indeed, to all throughout the building, are concealed. This practice is adopted in every showroom of the Company, and is one, we think, which could with great advantage be more universally adopted in fixing gas fires in private houses. The clean, efficient, and artistic appearance of a gas fire is undoubtedly marred when the piping is in full view. It is true that, to conceal the connections, it is necessary to take-up a section of the hearth; but the expense of doing this is small, while the consumer's after-satisfaction is well worth the little extra trouble. In many cases, it would appear, the gas industry strains too much after economy, and too little after effect. Economy of fixing is an important point, but it is not everything; and there are hundreds of consumers who would be willing enough to incur a slight additional expenditure to achieve such a decided improvement. Every gas undertaking, large or small, should be able to demonstrate at its showrooms fires fixed with concealed piping. However, this is in the nature of a digression from the purpose of this article.

The cashiers' department is situated on one side of the reception hall; and the counter lighting fittings of this section are of the Company's standard pattern.

Heavy Apparatus.

The first item which claimed attention in the basement, which is white-tiled throughout, and has what is known as a "Stook" floor, was a model power house. This contains a Spencer-Bonecourt gas-fired boiler which provides the hot water for the radiators used for heating the building, and an electrical generator driven by an 18 h.p. "National" gas engine. Most of the current generated is employed for the mechanical ventilation of the premises.

Here again the lighting, which is by ventilator lamps of 1200 c.p., is excellent. There is a section fitted with laundry apparatus—gas wash-coppers, irons, a drying cabinet, &c. Another section is used for demonstrating how efficiently and economically gas can be used for cooking a simple lunch; while in another are grouped hotel and restaurant equipment, including radiophragm grillers, large roasting ovens, vegetable steamers, carving tables, fish fryers, and steam heated apparatus in connection with which a small Spencer-Bonecourt boiler is fixed. The arrangement of these heavy appliances leaves nothing to be desired.

Sectionalization of appliances—which can be regarded as the established practice of the Company, for it is embodied in all their new showrooms—is carried out in the cooker sections, of which there are two, one for hire-cookers, the other for sales appliances. These cookers, with their white enamel, make a brave and attractive show. There are many other items of interest in the basement. A mechanical plate and dish washer, heated by gas and driven by electricity, is sure to claim attention, as also is a white-enamelled gas operated refrigerator. The latter consumes only 2½ c.ft. of gas an hour, which, with gas at 5s. per 1000 c.ft., works out at 0·15d. an hour. A similar apparatus operated by electricity consumes a quarter of a unit an hour; and if the current costs only 1d. a unit, this means that the running costs of the electrical machine are nearly twice those of the gas refrigerator. In addition to the foregoing, complete counter equipment for tea and coffee making is demonstrated in the basement. In imagination we will now take the lift, and ascend to the first floor.

The First Floor.

The first floor, broadly speaking, is divided into four departments. One deals solely with coke, another with gas fires and radiators, a third with gas-heated hot water apparatus, and a fourth with lighting fittings. Concerning ourselves first with the display of coke apparatus, domestic boilers by all the leading makers are shown, sectionalized, complete with flues; and there is a fine uniformity about the exhibit. In the coke boiler section is a show case demonstrating the various grades of coke the Company supply. Another section of what we have termed the coke department is devoted to the display of fires and stoves. There is a Boys hearth, the principle of which has been described in the "Journal;" and we were most favourably impressed with the excellent appearance of the various coke stoves.

A Novel Display.

Particular interest attaches to the gas fire section. Here eight typical coal grates are shown to which have been fitted gas fires. In each case care has been exercised to retain all the desirable features of the coal grate design. There are many consumers who cherish a liking for the design of (say) the mid-Victorian grate; and in this section of the showrooms there is practical demonstration that the fitting of a gas fire to such a grate need not disturb their artistic leanings. Indeed, the final effect is to accentuate the beauties of design, not in any way to mask them. The eight grates include most popular models, from the ordinary modern brick hob stove and the register coal fire to the mid-Victorian hob register. Photographs of the grates prior to the fitting of gas fires are exhibited, so that builders and architects, as well as the general public, can see for themselves how excellently gas heating can be incorporated in dwellings which primarily have not been laid out for it.

General Effect the Main Consideration.

Regarding the decoration of the building, general effect has been the main consideration. Consequently all the lighting fittings have been placed in one room; and even in this room the aim has been to preserve a pleasing general effect. Very wisely the Company have decided on five standard plain colours for their silk shades; and these colours are to be shown judiciously. One week one colour will be used for all the shades exhibited. For the following week a complete change to another of their standard colours will be made. One of the advantages of this standardization scheme has been a lowering in price to the consumer; and since the scheme has been in operation, sales have increased by 75 p.ct. Another and no less important advantage is that the lighting fittings section is not a heterogeneous jumble.

To complete the description of the exhibits on the first floor, it remains to refer to the gas heated hot water apparatus. There are three sections in this department. One consists of a bathroom fitted with geyser-supplied bath, a lavatory basin drawing its hot water from a small geyser, and a gas heated towel rail. Another section is devoted to the demonstration of hot water circulators, and is complete with a bath fitted with an attractive shower; while the third is a geyser sales and inquiry section where appliances of both the gravity-flow and the pressure type are exhibited.

Also on the first floor are the Women Advisory Staff's room and a large test room fitted with all the necessary apparatus—meters, &c.—for determining from a practical cooking point of view the efficiencies of various cookers, both gas and electric. Here, too, are the foremen's offices.

Lecture Hall.

A further lift ascent brings us to the second floor, which for the most part is taken up by offices. There are the inspectors' office, the office of the inspector in charge, and a typists' room. On this floor also are the staff dining room and kitchen. Finally there is a magnificent lecture hall, easily capable of seating two hundred persons, where cookery demonstrations and popular lectures, as well as staff lectures, will be given. Special attention has been paid to the acoustic properties of this hall, the walls of which have been treated with Cabot's three-ply quilt—a treatment which has proved highly successful in connection with the lecture hall at the Institute of British Architects, in Conduit Street. The demonstrator's platform is an extending one.

The premises are complete with splendidly equipped stores, where separate racks have been provided for over 2000 items. Adjacent to the truck store is a vacuum cleaning plant serving the entire building, a gas incinerator, and apparatus for the domestic hot water supply.

Influence of Good Publicity.

Such, then, is a cursory description of the finest gas showrooms we have ever seen—we go so far as to say they are the finest in the world. And we conclude our task with the feeling that the foregoing description is all too inadequate for such a magnificent piece of publicity work. One thought remains in our mind. There may perhaps be those responsible for small gas undertakings who, after reading this article, may say: "Of course, this is all very well for a concern the size of the Gas Light and Coke Company. Our case is very different." It certainly is different; but the difference is one not of kind, but of degree. The goodwill of the gas industry does not depend solely on the energies of the large undertakings; it depends equally on the aggregate energies of the small ones. The main purpose of this description has been to indicate how extremely well the Gas Light and Coke Company are demonstrating to the general public the value of gas and coke in the home, in public service, and to some extent in industry, and how necessary it is that all undertakings should make every endeavour to carry out their publicity work to the best advantage, bearing in mind that it is better to display a few pieces of apparatus well than to exhibit a vast array of appliances indifferently. Good publicity work has an enormous influence.

THE EXTRAORDINARY COAL POSITION.

By NORTON H. HUMPHRYS.

At no previous time has the coal industry presented such a mass of strange contradictions, or a more unsatisfactory prospect so far as users of gas coal, whether by the hundred or the half-million tons per annum, are concerned. The most feasible explanation is that at no previous time has it been the subject of so much attempted Government control and interference, of a party topic in politics, or such blatant attempts to utilize it as a cat's paw for the amiable purpose of wrecking national industry and stripping all capitalists, including those who after half-a-century of frugal living, to an extent that the modern "doler" would rebel against, and working nearly double the hours that the miner is resisting, have accumulated a pittance sufficient to provide for modest requirements of old age, and invested it to the last halfpenny in sound home enterprise.

Although a considerable proportion of the recalcitrants have been at work for some weeks, and their number is increasing daily, large users of coal—and especially those who are not in a position to wait for supplies—are simply being tossed in a blanket between the Government, the private importers, and the mines at work. They have no voice in the matter of price, quality, or date of delivery, except that some of the mines are offering prompt supply at extortionate prices, but with no guarantee of purity or quality. The Government say they can only deal with those in the last ditch, and that ordinary supplies should be obtained through private importers; and these, when applied to, are either unable or unwilling (with a view to maintenance of prices) to accept orders or guarantee delivery within some weeks. The Government, though attempting to control prices in connection with other less important necessaries, have refused to do anything for the coal consumer. As a consequence, many gas engineers are receiving the statutory hundredweight delivered at their private residences, for a price equivalent to little, if anything, more per ton than the quotations they are receiving at the office for lots of a few hundred tons. Surely large users of coal are entitled to some explanation of the present extortionate terms and prices, and to the prospect of early relief from such intolerable burdens. As usual at times of scarcity, gas companies are being exploited by offers of outcrop and other rubbish that is not worth raising at normal times, under plausible titles similar to those in established use for describing genuine good quality gas coal.

Certain partisans have been foolish enough to increase discord at a time when there was never greater need for agreement, by jubilant expressions over an assumed defeat of the Miners' Federation. They ignore, or are ignorant of, the fact that the Federation are simply accepting the position of a vanquished foe with a view to obtaining increased public sympathy, and damaging the prestige of the Government and of the colliery proprietors. There is no humble acceptance of a victor's terms. Ostensibly the dispute originated over a simple question of hours and rates of pay; but, as usual with quarrels, big or little, neither the general public nor the majority of the combatants have clear or correct notions as to "what it is all about." There is no evidence in favour of the suggestion that men, cowed and subdued by acute privation, are humbly accepting terms that were insolently rejected six months ago. If the daily papers are rightly informed, they can only be induced to return to their duties by a bonus in addition to the terms said to be "impossible" in April. This is practically a share of the profits, and as such is a long stride towards full control of the industry, and the consequent power to restrict output to the extent of creating an artificial scarcity, thus forcing panic prices. There will be as much trouble when the time comes for reducing or stopping the bonus as has been experienced over the subsidy, the dole, and numerous other temporary expedients of a patchwork character. It is always easier to sink in a bog than to fight clear of it.

A cartoon in a daily paper presents the miner's "back-to-work smile;" and we may appropriate a remark recently made by the President of the Institution of Gas Engineers respecting an entirely different matter, and say: "No wonder you smile." He may be expected to experience satisfaction with an apparent important advance towards the mirage of Syndicalism, Socialism, Communism, and Bolshevism, that has been so temptingly dangled, like the proverbial bunch of carrots, before his nose for thirty years or more. During that time he has been patted on the back and granted one concession after another by complacent but vote-hungry Governments, all tending to assist towards the goal above mentioned, or to protect him from privation or injury that may be thrown on the community at large, by strikes and other extreme action. He has enjoyed six months' either holiday or freedom to take up other remunerative occupation, chiefly at the expense of taxpayers and coal consumers, but assisted by such part of the union funds as is not required for working expenses or political propaganda, or by enemies desirous of wrecking our National Constitution. He is protected by the so-called living wage arrangements from privation due to exorbitant prices, contributes nothing worth the name towards rates and taxes, secures assisted house rent, free education for children, free medical attendance, insurance, and many other things not attainable by others unable to earn anything like the sum that he is now said to be receiving.

Certain busybodies whose mischief-making propensities are not due to malice or partisanship, and well-meaning individuals whose hearts are stronger than their heads, plead for sympathy with the miner, as being an ignorant and misguided dupe of unscrupulous agitators. But the individual member of a society cannot evade responsibility for the acts of his representatives, or of special committees appointed by them. An absentee director of a public company shares the responsibilities of his colleagues in an equal degree; and, in like manner, every individual member of the Federation is responsible for the bleatings of the anarchist and Russian agent, who has repeatedly proclaimed himself as the representative of a million men. Many may not have taken him seriously, but regarded such a doubtful friend as a convenient cat's paw for prolonging the so-called negotiations with owners or Government, for creating ill-feeling against the powers that be, or diverting public attention, by mountebank tricks, from the real issues and the work that is being done by the silent Federation Council. However that may be, there is no valid excuse. The members are individually and collectively responsible for every seed of hatred and class war that has been so industriously planted, and deserve no more consideration than a defaulter who has lost an excellent position by deliberate negligence, or worse. Any superfluous sympathy, which usually takes the line followed by the man who was moved by a tale of distress to the extent of putting a hand in his pocket, but kept it there, might be more reasonably directed towards the large body of railway and other workers who are likely to be on half-time or even less for months and years to come; to the poor and aged investor dependent for actual bread and cheese on the dividends; and generally to enterprise dependent on coal at fair prices and on regular supplies.

The gas industry is, and always has been, conducted on fair and honourable commercial lines. It has not been assisted by fictitious flights of imagination, by appeals to public sentiment, or by the misrepresentations that are inseparable from politics. But as much cannot be claimed for coal or for electricity. Both are seeking to use sentimental, political, and Government influence as an aid towards securing objectives not attainable by fair and square commercial dealing, and are not a great distance from the agitator who said that, if he could not get what he wanted by fair means, he would do so by foul. There is no use in disguising the fact that a new line of unscrupulous cut-throat competition is developing in more than one direction. It can only be met by more active and aggressive selling methods than have been accepted in the past.

Since the above was written, an inquiry as to the cause of delay in respect to a cargo 14 days overdue has elicited a statement to the effect "that for 10 days there has been an embargo on imported coal." Other evidence also supports the suggestion of an artificial scarcity of gas coals created for the purpose of forcing exorbitant prices.

Catering for Gas Students at Sheffield.—The Chief Librarian of the City of Sheffield Public Libraries has sent us a catalogue of books on the gas industry which are in the central libraries. Students in Sheffield have a splendid chance of increasing their knowledge of the industry, for the selection of books at their disposal is most comprehensive.

American Gas Association Headquarters.—Announcement has been made by the American Gas Association of an intention to move their headquarters, about next May, from Madison Avenue, New York City, to the Graybar Building, Lexington Avenue. Referring to the matter, the "American Gas Journal" says the fact that the gas industry is growing rapidly, the consequent expansion of the activities of the six sections of the Association, and the increased activity shown by the members, are what made this move to more commodious and central quarters imperative. Add to the various activities of the Association the facts that the steady expansion of plant and distribution facilities during 1925 enabled the 984 gas companies in the country to connect 403,000 new customers to their lines (making a total of 10,600,000 customers at Dec. 31 last year), and that the total population served by the companies is now in excess of 52,000,000, and it is obvious why the Association are seeking these larger quarters.

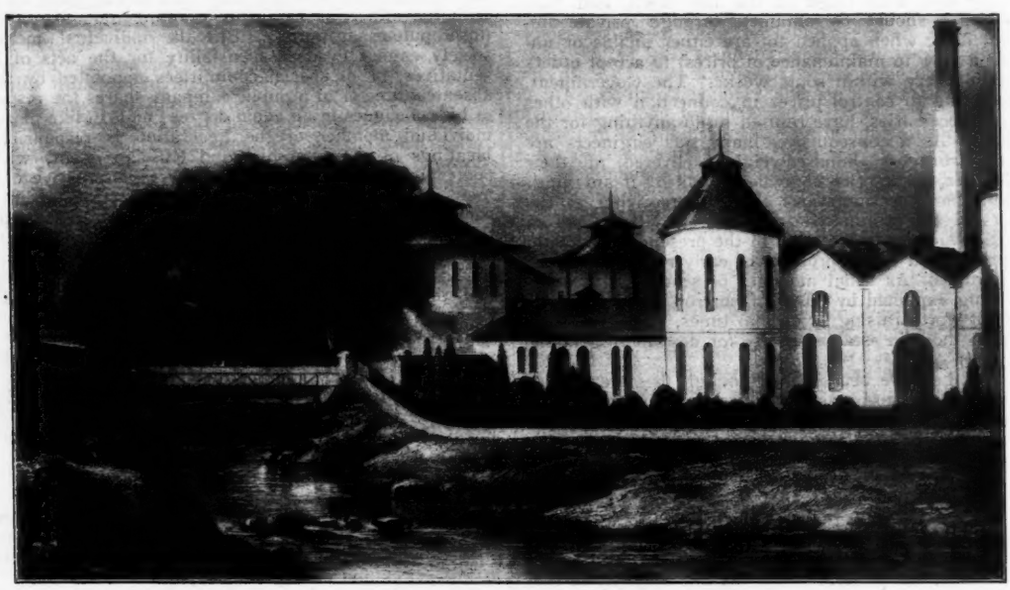
THE NEW PLANT AT GRANTON.

The Interest of the Duke and Duchess.

The great interest which members of the Royal Family—from Their Majesties the King and Queen downwards—take in the industries of the country was further attested by what took place in Edinburgh last Saturday week, when T.R.H. the Duke and Duchess of York respectively inaugurated a magnificent installation of Woodall-Duckham vertical retorts, and unveiled a commemorative tablet. A visit to such works, and an inspection of the processes, is not something to members of the Royal Family which is undertaken in any perfunctory manner; it is an opportunity taken for acquiring fresh knowledge.

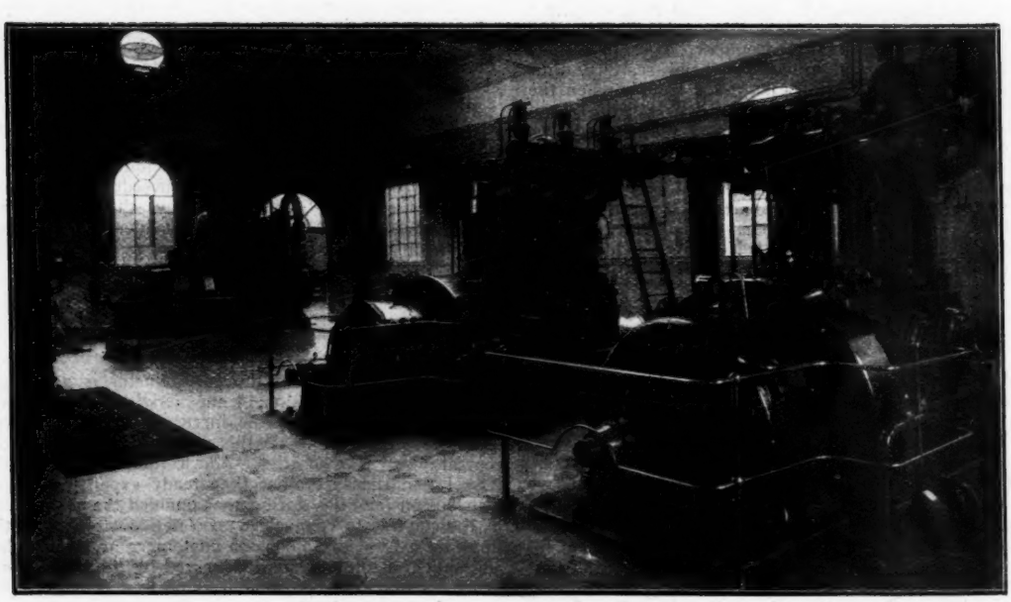
All who were present at Edinburgh were greatly impressed with the interest which both the Duke and the Duchess displayed in not only the general but the minor details of the new plant. From the Engineer and Manager (Mr. Harry H. Gracie) we learn that the Duchess sought information as to the size of the works; and she stated that, had time permitted, she would have liked to spend the whole day on them to receive a demonstration and explanation as to the processes involved in the manufacturing operations. In making inquiry as to the number of workmen employed by the Department, she was also curious to know how many ex-service men were included in the number. When told that 600 to 700 tons of coal were carbonized per day, she interjected the remark that, at the price of £4 10s. per ton which people had to pay for coal to-day, that quantity would "mean a lot of money." Asked if the gas undertaking was going back in view of the progress of electricity, Mr. Gracie was able to inform the Duchess that gas was advancing at an even more rapid rate than electricity; that, in his opinion, electricity would never oust gas, owing to its convenience and comparative cheapness, and that every day the public were realizing to a greater extent the enormous benefits to be derived from the use of gas for both domestic and industrial purposes.

An account of this conspicuous event in the history of the Edinburgh Corporation Gas Department was given in the "JOURNAL" last week, together with illustrations. A few pictures which we were unable to include last week are presented to-day.



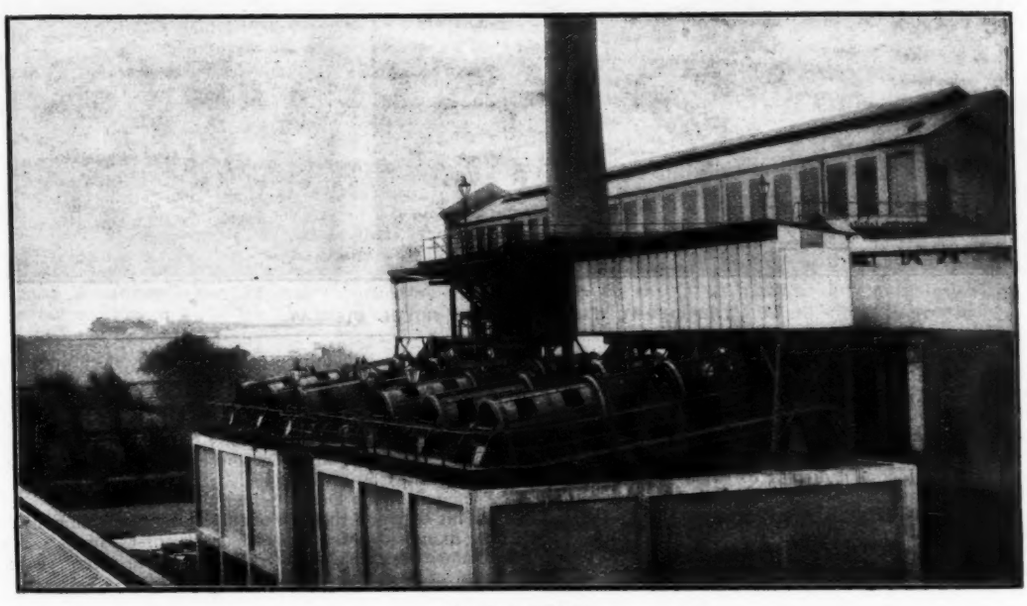
THE EDINBURGH OIL GAS LIGHT COMPANY'S WORKS, TANFIELD.

Founded 1824. Sir Walter Scott, Bart., Chairman.

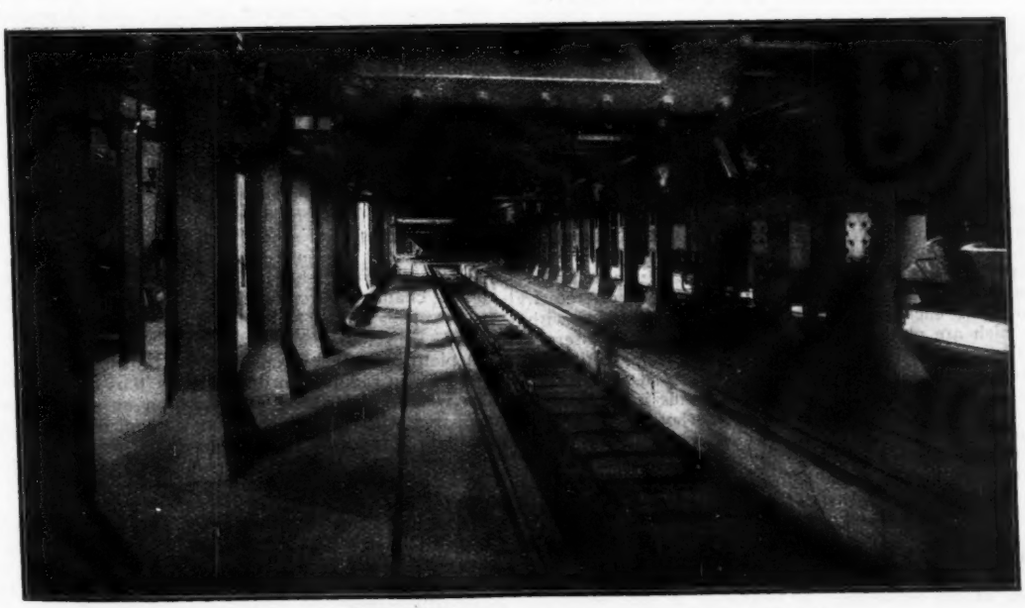


THE ELECTRICITY GENERATING PLANT.

GRANTON WORKS—SOUTH END LOOKING EAST.



COKE SCREENS.



AT THE FOOT OF THE WOODALL-DUCKHAM VERTICAL RETORTS.

TRADES EXHIBITION AT DERBY.

Attractive Exhibit of the Gas Company.

THE DERBY GAS COMPANY'S NOVEL DISPLAY.

At the Derby Drill Hall last week, manufacturers of labour-saving devices, patent foods, and other articles which interest the home maker, exhibited their wares, and they will continue to do so till next Friday.

The Derby Gas Company have an imposing stand facing the main entrance. The most original exhibit, which is attracting a great deal of attention, is a display of twelve tables showing bread, cakes, breakfast for six people, boiled dinner for six, and tea for eight people, supper for eight people, and a day's cooking for two people. The food on each table had been cooked by a pennyworth of gas.

There are in addition two beautifully decorated tables showing a cooked nine-course dinner, and a buffet. All the tables are fitted with twelve pennies 15 in. in diameter linked to a shilling 3 ft. in diameter, which is revolving in the middle of the centre stand. These coins have been cleverly executed by one of the Company's employees. The whole of the food has been cooked by an independent cookery expert, Miss Ella Coy, Principal of the Derby School of Cookery.

This effort on the part of the Derby Gas Company emphasizes the many advantages which gas confers on its users, and the advance which the industry has made in recent years.

"SALERMO" LOW-TEMPERATURE CARBONIZATION

Outline of the System.

The "Salermo" process is based on patents taken out by E. M. Salerni, and the Company responsible for its development is Salermo, Ltd., Imperial House, Kingsway, W.C. 2. The plant is of the externally heated type.

Retort.

The retort consists of semi-cylindrical troughs of mild steel. A standard trough for carbonizing non-caking coal is 10 ft. long, with a radius of 8 in. For bituminous coals, the radius is reduced to 5 in., and the trough is shortened. Eight to fourteen of these troughs are placed side by side under a common roof, thus making a single carbonizing chamber or retort. Along and above each trough is a central shaft provided with paddles, which are placed close to each other, but in different planes. They cause the coal to move along from trough to trough, and they keep it in constant motion, so that it behaves like an emulsion. Each paddle terminates in a scraper, the function of which is to remove from the bottom and sides of the trough any graphite, &c.

The first trough is fed automatically and continuously from a pre-drying installation placed above the retorts. To secure even flow, the coal is ground to pass a ⅜ in. sieve.

Pre-Drying: Heating of Retort.

The coal, reduced to a suitable size, is fed on to a drying conveyor. Hot combustion gases are passed counter-current to the travel of the conveyor.

The heating of the retort is effected by gases from an outside source—*e.g.*, producer gas from coal of poor quality—or by burning the gas evolved in the process. The last trough at the semi-coke exit is heated by the incoming gases at a temperature of about 700° C. The temperature of the coal itself does not exceed 550° C., and the gaseous products of carbonization are subjected to a temperature not higher than 450° C. The heating gases enter the dryer at 400° C., and leave it at 80° C. The products of distillation are not diluted by the heating gases.

The distillation products are filtered before any condensation takes place. The products then pass through impact water-cooled condensers of special design, involving two stages. The primary tar is condensed, and the gas passes to a holder.

The carbonized material is discharged continuously on to a cooling chain conveyor fitted with a system of cold-water pipes.

General Considerations.

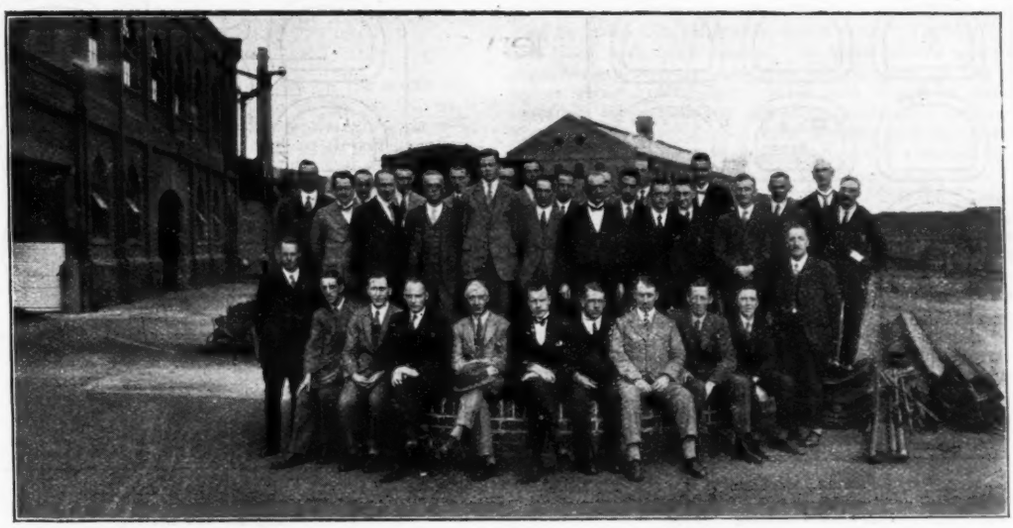
A plant consisting of one retort of 12 troughs, each 10 ft. long and 8 in. in radius, can deal with 75 tons of coal in 24 hours. The weight undergoing carbonization at any moment is low compared with the total amount carbonized. In other words, the plant is small for a high capacity.

The makers claim that the plant is compact and simple, and that both capital cost and cost of upkeep are low. Control, they say, is easy.

The following are the yields from Scotch and Yorkshire coals as stated by the firm: Primary tar, 20 to 22 gallons; gas, 3500 to 4000 c.ft. (785 B.Th.U.); semi-coke, 75 p.ct. of the weight of the coal. The semi-coke contains from 10 to 15 p.ct. of volatile matter.

WALES AND MONMOUTHSHIRE JUNIOR GAS ASSOCIATION.

Opening Meeting.



AT THE BATH GAS-WORKS.

The First Meeting of the Session was held at Bath on Saturday, Oct. 2. The members were received at the works of the Bath Gas Light and Coke Company by Sir Percy Stothert, Chairman of Directors, and Mr. J. Wesley Whimster, Engineer and Manager.

Sir PERCY STOTHERT extended, on behalf of the Directors of the Company, a hearty welcome to the members of the Association.

Mr. WESLEY WHIMSTER remarked that extensions were being carried out at the works of the Company, and he hoped they would prove of interest.

Mr. C. BATEMAN (President) proposed a vote of thanks to Sir Percy and Mr. Whimster for their welcome.

Mr. F. BOARDMAN (Cardiff) seconded the proposition, which, after being supported by Mr. A. H. SHEPHERD (Treasurer), was carried with acclamation.

The members then divided into parties, and were conducted over the works by Mr. Whimster, Mr. Bateman (Assistant Engineer and Manager), and Messrs. Miell, Hole, and Kaye.

Later the members were afforded an opportunity of inspecting the Company's extensive showrooms in Cheap Street, Bath, after which they were entertained at tea by the Chairman, Directors, and Engineer and Manager of the Company. Mr. WESLEY WHIMSTER presided.

Mr. W. E. CROWLEY (Newport) proposed a vote of thanks to the hosts for their hospitality—a motion which was seconded by Mr. C. FELTON (Newport), and heartily endorsed by the members.

Mr. C. BATEMAN (President) expressed his sorrow at the news received of the illness of Mr. B. J. Bell, of Cardiff, a Past President, and Mr. J. Wood, of Pentre, immediate Past President. Both, he said, were enthusiastic supporters of the Association; and he proposed that the Secretary be instructed to forward a vote of sympathy to them.

Mr. CROWLEY seconded the proposition.

A vote of thanks was accorded the Wales and Monmouthshire District Institution of Gas Engineers and Managers for the awards made to members for papers presented and examination successes during the past session.

PRESIDENTIAL ADDRESS

of

Mr. C. BATEMAN, of Bath.

The Bath Works are at present in a state of transition. A great deal of reconstruction is in progress; in fact we are practically building a new works on an old site.

CARBONIZING PLANT.

The River Avon passes practically through the centre of the works; and the old retort houses, which are four in number, follow the bank of the river. They consist of 31 beds of eights (horizontal settings); the retorts being 20 ft. long and having a Ω-shaped section of 22 in. by 16 in. This plant is capable of an output of 3½ million c.ft. per diem.

These settings are not all of the same design. The original setting was of the type shown in fig. 1. When these retorts were re-set, it was decided to stagger them, as indicated in fig. 2, thus giving space for a much better design of combustion chamber, and consequently better results from the settings. The foregoing alterations can, of course, be carried out without rebuilding the main arches. Where it was necessary to rebuild these—*i.e.*, in the older settings—they were made semi-circular, and the retorts set in the modern method of four tiers of two retorts.

The two Fiddes-Aldridge machines which serve these beds are of different patterns, one being of the usual style—the box type chain—and the other the more modern pattern. The chain on the latter machine has a central member, and is built up with push plates on either side, which system gives more coal space in the retort. The old machine puts in an average charge of 9 cwt., whereas the later type is capable of putting in a charge of 11 to 12 cwt.; these weights, of course, being based on our size of retort—22 in. by 16 in. by 20 ft. long.

NEW RETORT HOUSE.

The site for this house was unfortunately on 13 ft. of recently made-up ground, while the ground below was of a poor nature for foundations. Having regard to the total weight of the plant (approximately 11,000 tons), it was necessary to make absolutely certain of the foundations. To this end, some 370 reinforced concrete piles were driven, and a reinforced raft was built on to the heads of these piles, which were precast on the site, and were 14 in. square, suitably reinforced, averaging 30 ft. in length. The final test for each pile was a maximum of ½ in. movement per ten blows of a 2-ton monkey having a fall of 3 ft. Owing to the unequal nature of the strata in the original ground, several piles had to be dollied and lengthened. The coke hopper is supported on a similar foundation.

The contract for the whole of this plant is being carried out by Messrs. Drakes, Ltd., of Halifax, and comprises a complete unit, capable of carbonizing 230 tons of Somerset coal a day, representing a daily make of 2,800,000 c.ft. of gas. Figs. 3 and 4 give a good idea of the general lay-out of the plant.

The house is divided into two benches of seven beds, each containing ten retorts, having a section of 24 in. by 18 in., 23 ft. long. These are of fireclay, while the combustion chamber and internal setting walls up to the bed of the top retorts, and also the side walls, are built of silica material. The fronts of the settings are insulated with a course of anti-thermic material, and there is also an insulating course on the bench top. Each retort is equipped with double ascension pipes, and the hydraulic mains are continuous for each bench of seven beds, having a fall to each end of the bench, and delivering into four tar towers, thus eliminating all tar mains, valves, &c. Retort house governors are included in this plant, which represents the last word in horizontal practice.

The coke plant installed in connection with this house is of unique design; and, as will be noticed from fig. 5, special attention has been given to the grading of the coke. A special feature of the plant is the travelling coke screen, which is fed from a transverse conveyor, and allows the hoppers to be evenly filled.

One end of the building is of a temporary nature, being so arranged that the house, when completed, will take 28 beds.

This unit is complete in itself, and comprises a wagon tipper, and coal and coke handling plants. A stoking machine

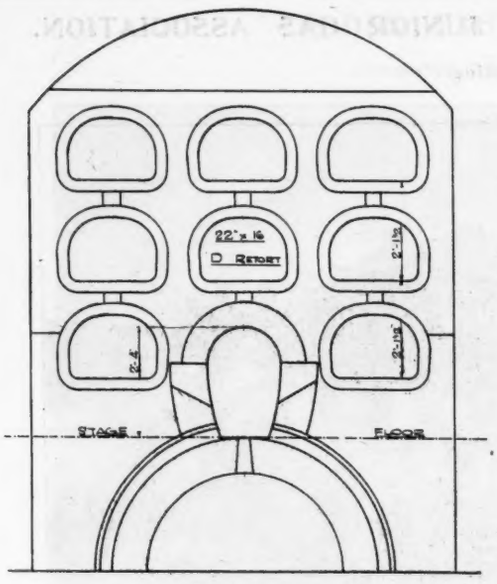


Fig. 1.—Old Setting.

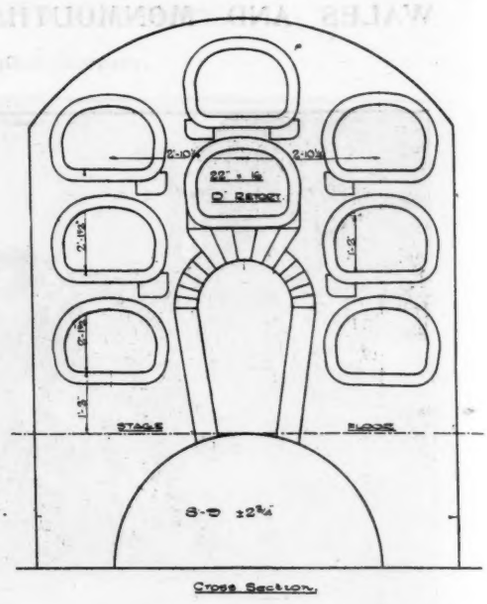


Fig. 2.—New Setting.

of Drakes' manufacture has been installed, and a second one is on order. A feature of this retort house which is also incorporated in the old retort houses is the "Bath" grate; and this, in my opinion, is a most efficient piece of plant. Fig. 6 is self-explanatory.

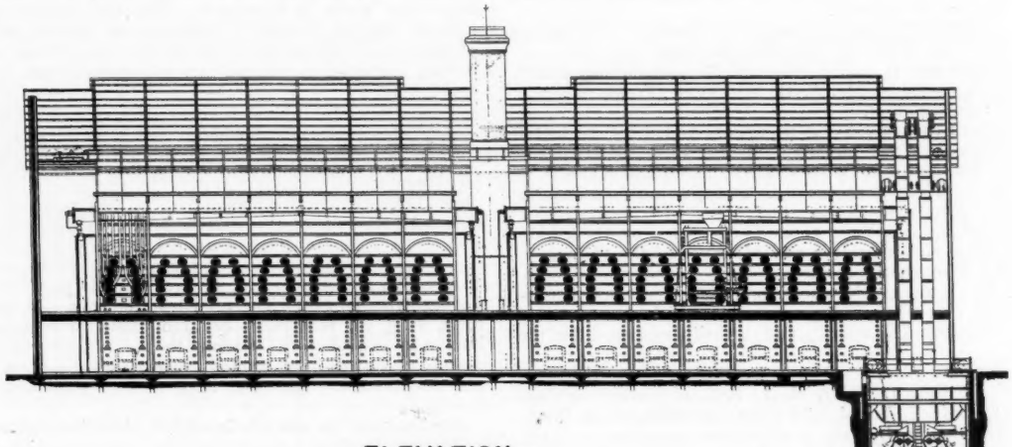
Condensing Plant.

The condensing plant consists of two water-tube condensers, each with a capacity of 3½ million c.ft. of gas per diem. These were constructed by Messrs. Dempster, but owing to the increased coal gas make which is now necessary to meet the increased consumption, this plant is being augmented by a Holmes "Super" condenser. This extra apparatus will be capable of dealing with 3 million c.ft. of gas per day; the surface cooling area being 3900 sq.ft., and the water consumption 20 gallons per 1000 c.ft. of gas passed.

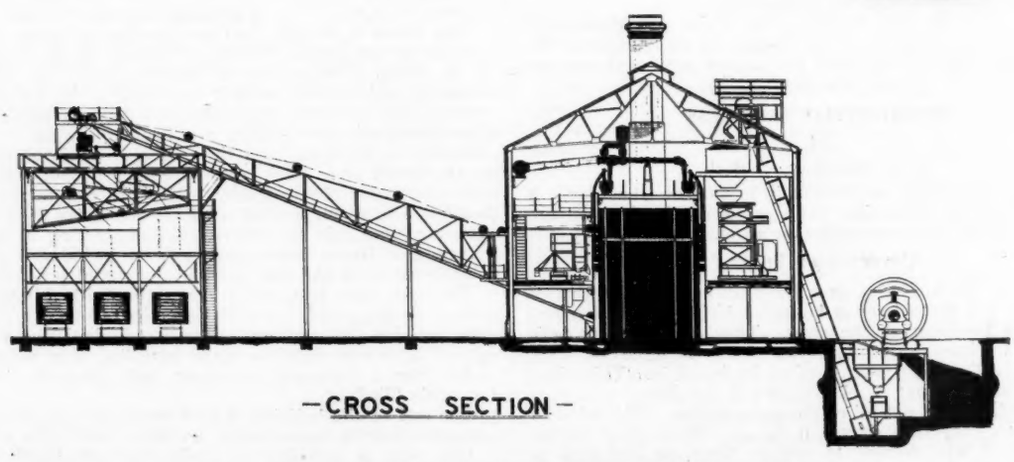
There are two sets of coal gas exhausters, each comprising a 150,000 c.ft. per hour Waller and a 100,000 c.ft. per hour Bryan-Donkin.

Washing and Scrubbing Plant.

This plant consists, at present, of one Livesey washer, tar scrubbers, and one Kirkham rotary scrubber, and is capable of dealing with 3 million c.ft. per day. The foundations for



—ELEVATION—



—CROSS SECTION—

FIGS. 3 AND 4.—GENERAL ARRANGEMENT OF CARBONIZING PLANT.

the new scrubber yard are just being put in; and a complete new washing and scrubbing plant is to be installed by Messrs. Holmes, of Huddersfield. This will consist of two 4-million streams, each having a Livesey washer and a rotary washer scrubber of the brush type. One of these washer scrubbers will be employed as a naphthalene extractor; the extracting medium being gas oil.

PURIFIERS.

The coal gas purifiers, which are situated on the north side of the river, consist of twelve boxes, 30 ft. by 20 ft., each containing 50 tons of oxide. These boxes were originally in two sections—coal gas and oil gas—but when the oil gas plant was rebuilt on the south side of the river, it was erected complete with purifiers; and the whole of the old boxes are now utilized for coal gas purification. They are all of the old lute type. Schemes for a complete new dry purification plant are now being considered.

The plant will be rather small until the new purifiers are installed; and it was decided to run a temporary connection

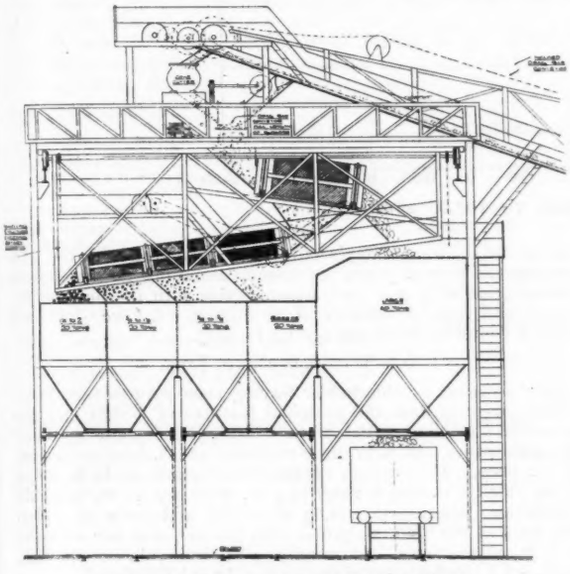


Fig. 5.—Coke Handling and Screening Plant.

to the new oil gas boxes until the work is completed. This necessitated crossing the river; and a 16-in. main connecting these two sets of purifiers was slung from the old Toll Bridge.

STATION METERS.

The coal gas station meters and district governors are at present housed in one building. There are three meters of the following capacity.

No. 1	80,000	c.ft. per hour.
No. 2	60,000	,, ,,
No. 3	50,000	,, ,,
Total	190,000	c.ft. per hour.

CARBURETTED WATER GAS PLANT.

The above was originally on the north side of the river. This plant required enlarging and bringing up to date, and it was decided to rebuild it on a new site, on the south side of the river; the new building being arranged to incorporate the manufacturing plant, boiler house, and engine room. The plant consists of two Humphreys & Glasgow carburetted sets, capable of producing 1,000,000 c.ft. of gas per diem; and one blue set of 1,250,000 c.ft. per diem. The air-blast is supplied by Sturtevant rotary blowers, driven by De Laval steam turbines; there being one 30 H.P. set in duplicate, and one 55 H.P. set. The steam for the whole of the plant is generated by three dish-end Lancashire boilers, each 30 ft. long by 7 ft. 6 in. diameter, fitted with "Turbine" furnaces, and fired with coke breeze. All three boilers are fitted with superheaters, which raise the temperature of the saturated steam about 150° Fahr. Weir feed pumps in duplicate are installed for supplying softened, preheated water from a Paterson softener to the three boilers, and circulating water for the three water gas sets. The coke is elevated to the stage floor by a hydraulic lift..

There are two sets of exhausters. One set comprises two 100,000 c.ft. per hour Bryan-Donkin two-bladed units, driven by a 27·5 B.H.P. horizontal steam engine; and an auxiliary set consists of an 80,000 c.ft. per hour three-bladed Waller exhauster and horizontal steam engine.

A counter-balanced relief holder of 80,000 c.ft. capacity in a steel tank is situated at the eastern end of the water gas building, and a 120,000-gallon oil tank, storing oil for use in the C.W.G. plants, is situated adjacent to the relief holder. A "P. & A." tar extractor is placed in the gas stream between the plant and the purifiers. The latter, of the dry lute type, are four in number, 35 ft. square by 6 ft. deep. The purified water gas is measured by an 80,000 c.ft. per hour rotary meter, prior to mixing with the straight coal gas. All three sets are complete with dust interceptors.

The main electric generating plant, which is accommodated in the C.W.G. plant engine-room, comprises two sets of Belliss & Morcom compound steam engines, driving two "E.C.C." open type, interpole, compound-wound dynamos with shunt regulators. The two Belliss & Morcom engines are worked at 120 lbs. pressure (superheated steam), and the exhausts can be discharged to atmosphere or through a Belliss & Morcom multi-kinetic jet condensing plant, driven by a 7 H.P. electric motor. The whole of the condensing plant is accommodated in the basement of the machinery room.

The two generators each supply 125 KW. at a pressure of 220 volts D.C. The electrical energy is taken direct to a main switchboard by cables underneath the machinery room floor, and from there is fed by overhead insulated cables to the distribution boards, &c., on the works.

The foregoing electrical plant was installed to augment the existing generating plant, located in the lower portion of the main workshops, which comprise a 22·5 KW. 220-volt continuous current "E.C.C." dynamo, driven by a 44 B.H.P. "National" gas engine; the whole installation being in duplicate. A subsidiary switchboard in this power house enables the auxiliary plant to be thrown into circuit in place of the main plant, in the event of the latter being under repair, or otherwise not working. The current from either power plant is fed through distributing and control boards in the retort house, &c., to the various motors.

TAR PLANT.

With regard to the tar plant, the whole of the tar manufactured on the works is actually dealt with by this plant. The tar is dehydrated in the usual manner, and utilized in the manufacture of "Spatar," which is well-known as a first-grade compound for road making and dressing.

SULPHATE PLANT.

The sulphate plant, supplied by the Chemical Engineering & Wilton's Patent Furnace Company, consists of still, two closed saturators with steam ejectors, draining table, and centrifugal drier; both acid and liquor being gravity-fed to the plant. The salt is neutralized by admixture of ammonium carbonate.

BOOSTERS AND COMPRESSORS.

The one booster at present installed is of the Rateau type,

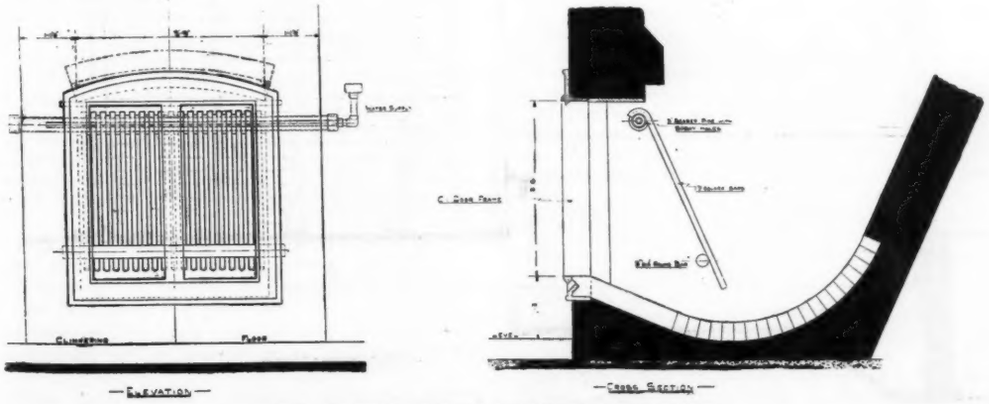
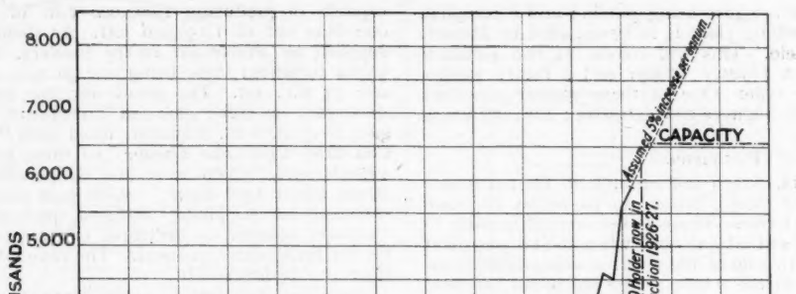


FIG. 6.—THE "BATH" INCLINED BAR GRATE.



MAXIMUM DAY IN RELATION TO TOTAL STORAGE.

having a capacity of 500,000 c.ft. per hour, at 1500 R.P.M. This is driven by a 30 H.P. motor. A second booster of this type has been purchased, and will be installed shortly; the capacity of this being 750,000 c.ft. per hour.

The compressors are housed in the coal gas exhauster house. They are all steam driven, and are of the following capacities:

1 80 H.P. engine, driving two 75,000 c.ft. per hour compressors.

2 23 H.P. engines, one driving a 50,000 c.ft. per hour, the other a 27,000 c.ft. per hour, compressor.

At present a scheme is being prepared for installing a new building which will incorporate a central valve room, booster house, and governor house. This will greatly facilitate the distribution from the works. It will, of course, take in all the holder connections, including No. 5 holder, which is now in course of construction.

Storage.

The storage capacity of this Company consists of three holders—two at the Upper Bristol Road Works, each having a capacity of 1,225,000 c.ft., and one small holder of 360,000 c.ft. capacity, which is at an outlying station on the district. The maximum working storage is at present 2,810,000 c.ft., or less than half of last year's maximum day's consumption. Shortage of storage capacity has necessitated the installation of a new holder. The accompanying graph shows the maximum day's output, as compared with the total storage for several years past; and, assuming an increase in consumption of 5 p.ct. per annum, even with the new holder, which will have a capacity of 3¾ million c.ft., we shall only have a complete day's storage up to 1927.

New Gasholder and Tank.

The necessity of this holder having been pointed out, I will endeavour to outline the principal features of design and construction. Dealing with the tank first, this is now in course of construction, and is in mass concrete, 208 ft. in diameter and 40 ft. deep. The section of the wall (which is built on an 18 in. thick foundation ring) is 4 ft. wide for 16 ft. from the foundation, tapering to 2 ft. 3 in. at the under-side of coping. The back of the wall is against solid ground, and has a footing of 2 ft. at the base. At roughly 4 ft. intervals up the wall, 4½ in. by ⅝ in. flat steel rings are set in the concrete.

There are 24 piers to support the standards of the holder. These are of uniform dimensions from top to bottom, 5 ft. 6 in. wide and 7 ft. through, and are constructed as an integral part of the wall. The rest-blocks are 48 in number, 5 ft. 6 in. by 2 ft. by 1 ft. deep, cast in position, and rendered with neat cement. In the wall itself are set 288 oak blocks, to which the guide channels will be fixed.

The dumpling, the outline of which is shown in fig. 7, is to be covered with a 9 in. cage of concrete; and the whole

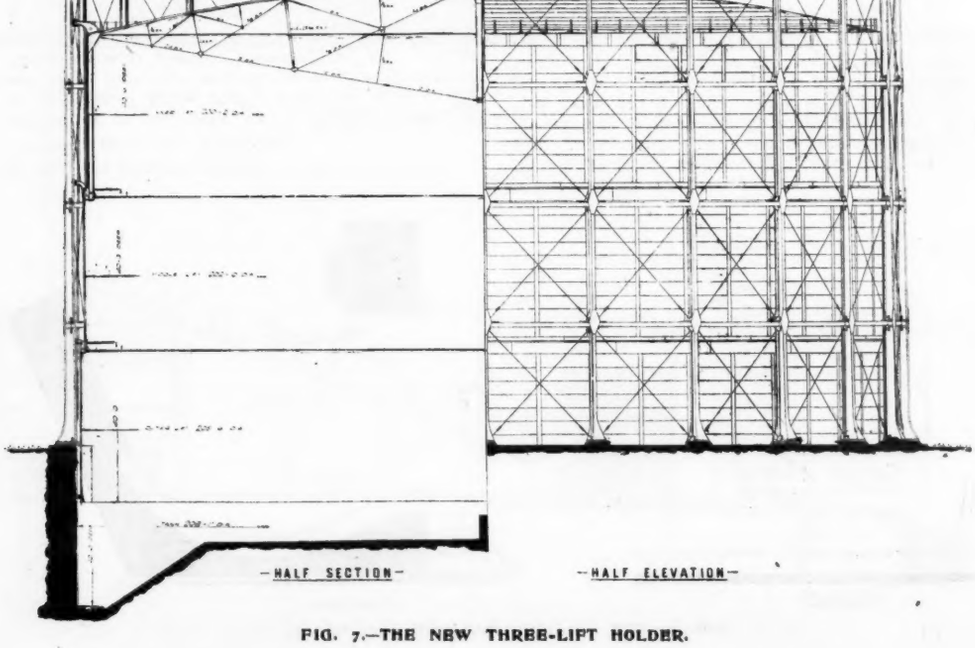


FIG. 7.—THE NEW THREE-LIFT HOLDER.

internal surface will be cement washed. Inlet and outlet pipes pass through the wall in a specially-formed duct, and are 36 in. in diameter. Messrs. T. Vale & Sons, of Stourport, are carrying out the work to our own specification.

To pass on to the holder itself, the contract has been placed with Messrs. Clayton, Son, & Co., Ltd., of Leeds, and comprises a three-lift frame-guided holder with an outer lift 205 ft. 6 in. in circumference and 40 ft. deep. The standards of the external framing will be 12 ft. high, and will take the form of a plate girder. The crown of the holder has a rise of 12 ft. in the centre, and is internally trussed. The steel plates for the lifts and crown range in thickness from ⅜ in. to ¼ in., according to position. The cups are to be square, formed of 10 in. by 3½ in. channel, curved to the radius, and are provided with floating holes to prevent the water overflowing the dip when the holder is cupping.

Workshops and Laboratory.

There are the usual workshops, including carpenters' and paint shop; also meter and stove repairing shops, and meter testing room. The Company carry out all their own meter and stove repairs.

A well-fitted laboratory is situated centrally in the works, and contains a complete coal-testing plant of 2½ cwt. capacity.

The following statistics apply to the Company.

Gas sold per annum (1925)	1,110,955,000 c.ft.
equal to	5,332,584 therms.
Maximum day's output	5,574,000 c.ft.
(The above figure is the highest in comparison with any other Company, being 1-211th of the annual output. This is possibly accounted for by gas fires.)	
Total storage	2,810,000 c.ft.
Number of consumers (ordinary)	11,884
" " (slot)	8,653
Consumption per consumer (ordinary)	336·47 therms.
" " (slot)	147·64 "
Average	256·9 therms.
(The average consumption per consumer (256·9) is the highest except Birmingham, which, of course, has a heavy industrial load, whereas Bath has none. The slot consumption is the highest.)	
Consumption per head of population (1921 census = 68,648)	16,183 c.ft.
Total length of main	151 miles.
Capital complete per 1000 c.ft. of gas sold	5s.
Price of gas per therm	5½d.

The foregoing remarks have, I think, covered the present plant and the proposed additions. One might be tempted to ask why the present policy was adopted for the new carbonizing plant, when vertical retorts are now the rage. The choice of plant is, in my opinion, purely a local one, depending to some extent on the coal available. The primary object of any gas company is, of course, to sell cheap gas, and the Bath Company has for many years been one of the foremost in this respect; and our results should be even better when a modern plant is installed.

Mr. G. Hughes (Chepstow) proposed, and Mr. T. Blake (Cardiff) seconded, a vote of thanks to the President for his address.

Mr. C. Collins (Swansea) asked why frame-guiding had been decided on for the gasholder in course of construction, when the general tendency to-day was to adopt spiral-guiding.

Mr. R. Williams (Abertillery), referring to the extensions taking place, asked why the carbonizing plant was built on the north side of the River Avon, and the washing and scrubbing plant on the south side.

Mr. A. Marsden (Bristol) commented on the introduction of horizontal retorts in the new retort house, in preference to vertical retorts. No doubt the type of coal used at a works was the deciding factor in regard to the kind of retort adopted, as the behaviour of coal was certainly not the same in the two types of retorts. Somersetshire coal as used at Bath was suitable for horizontal retorts. Would the President tell them why fireclay retorts were chosen in preference to silica?

Mr. Bateman, replying, said that the governing factor in deciding upon a frame-guided holder was that of uniformity; the other two holders being frame-guided. With regard to the new scrubbing and condensing plant being on the north side of the River Avon, this was done to save the expense which would otherwise have been entailed in having to re-arrange the exhausters. As to the new retort installation, not only was the coal at present used admirably suited for horizontal work, but horizontals gave a wider choice of coal than did verticals. Some of the American coal recently imported had proved itself better than the Somersetshire coal. He preferred the fireclay retorts to the new silica retorts, because of expense. Moreover there was still a certain amount of difficulty in applying the jointing material to the silica retorts.

In conclusion, the President thanked the members for their vote.

SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).

The opening meeting of the session of the Western District was held in the Royal Technical College, Glasgow, on Saturday, Oct. 9, when about a hundred members assembled to hear the new President's address.

Mr. Robert Gray (Greenock), the retiring President, was in the chair. He said that in Mr. Hall they had a man fitted in every way to carry out the affairs of the Association; and he hoped he would have a year of progress during his term of office as President of the Western District.

PRESIDENTIAL ADDRESS

of

Mr. James Hall, Provan Gas-Works, Glasgow.

[Extracted.]

I wish, first of all, to express my sincere appreciation of the honour you have conferred upon me in electing me your President. I can assure you I shall serve, to the utmost of my ability, the interests of our Association. I appeal for the continued active support of all members; and, with that help assured, I trust I shall be able worthily to uphold the confidence you have placed in me.

I should like to depart somewhat from the orthodox form of presidential address, and present to you a paper dealing with what I have called "Modern Methods of Gas Measurement." I have chosen this subject mainly because there are so few works where one finds such a variety of gas measuring appliances as are installed in the meter house at the Provan Gas-Works. The lay-out is admirably arranged to facilitate the actual comparison, and for the study of the general behaviour of the various units.

In the meter house at Provan are installed the following meters:

(*a*) Three drum meters of 200,000 c.ft. per hour capacity.
(*b*) A venturi meter of 750,000 c.ft. per hour capacity.
(*c*) Two "electro-flow" meters, one operated by an orifice plate, and the other by a pitot tube.

The size of these meters is the same for any capacity, but at Provan they are calibrated to register up to 1,000,000 c.ft. per hour.

(*d*) A Thomas meter whose maximum rated capacity is 750,000 c.ft. per hour.

The meters can be run in a variety of different groupings. The Thomas and "electro-flow" (orifice plate) are grouped together; the orifice plate being inserted between pipe flanges in the downflow from the Thomas meter. The venturi and the "electro-flow" (pitot tube) are also grouped together; the pitot tube being in the upflow leading to the venturi tube. Both these groups can be run in series, or either of the groups by-passed. When the hourly make permits, the three drum meters may be paralleled up, and run in series with the other meters; and, when the volume flowing per hour exceeds 750,000 c.ft., the venturi," "electro-flow," or Thomas, or all these meters in series, can be run in parallel with the drum meters, and the amount passing the latter so regulated as to take any desired quantity in excess of the maximum rated capacity of any of the other meters in circuit. The total volume of gas passing is obtained by the sum of the respective meter readings allotted for record.

Care and Adjustment of Meters.

Venturi Meter.

There are various adjustments which should be periodically checked after the meter has been in use.

(*a*) The throat section should be periodically examined. At Provan the throat section of the venturi meter has always been found to be in perfect condition. In fact, one might say it is the cleanest part of the pipe. This may be partly accounted for by the higher velocity of the gas through this section.

(*b*) The usual care should be given to keeping the water of the wet meter at the correct level. The water inlet valve is kept adjusted so that water drips continuously at the rate of about one drop per second. The water supply is provided with a filter.

(*c*) The speed of the density correcting gear should be tested (say) every three months. This is done by checking the speed of the wet meter by passing air through the density gear; any regulation required being effected by adjusting the sliding weight on the beam of the regulating valve. The makers supply a table which, if the temperature and absolute pressure of the air be known, gives the correct time for one revolution of the meter.

(d) The setting of the stylo arm and diagram pen should also be periodically checked. This is effected by standard weights supplied with the instrument.

TABLE I.

Date, 1926.	Atmos. Temp.	Bar.	Drum Meters. Meter Readings. Actual.	Drum Meters. Meter Readings. Corrected.	Drum Meters. Aver. Gas Temp.	Drum Meters. Gas Pressure. Ins. H_2O.	Drum Meters. Gas Pressure. Ins. Hg.	Drum Meters. Gas Pressure. Abs.	Venturi Meter. Meter Readings. Actual.	Venturi Meter. Meter Readings. Corrected.	Venturi Meter. Gas Temp. Main.	Venturi Meter. Gas Temp. Meter.	Venturi Meter. Gas Temp. Aver.	Venturi Meter. Gas Pressure. Ins. H_2O	Venturi Meter. Gas Pressure. Ins. Hg.	Venturi Meter. Gas Pressure. Abs.	"Electro-Flow" Meter. Meter Readings. Actual.	"Electro-Flow" Meter. Meter Readings. Corrected.	"Electro-Flow" Meter. Ave. Gas Temp.	"Electro-Flow" Meter. Gas Pressure. Ins. H_2O.	"Electro-Flow" Meter. Gas Pressure. Ins. Hg.	"Electro-Flow" Meter. Gas Pressure. Abs.	Thomas Meter.	P.Ct. Increase or Decrease Relative to Venturi Readings. Drum.	P.Ct. Increase or Decrease Relative to Venturi Readings. "Electro-Flow."	P.Ct. Increase or Decrease Relative to Venturi Readings. Thomas.	Electrical Units Used, and Running Costs. "Electro-Flow." Units Day.	Electrical Units Used, and Running Costs. "Electro-Flow." Cost Day.	Electrical Units Used, and Running Costs. Thomas. Units Day.	Electrical Units Used, and Running Costs. Thomas. Cost Day.	Remarks.
July 17 . .	66	29·85	7776	7706	68·5	7·2	0·53	30·38	7,800	7,628	72	70	71	4·8	0·35	30·2	7,690	7,513	71	5·2	0 38	30·23	7,792	+1·01	−1·5	+2·2	..	..	..	..	..
,, 18 . .	64	29·65	7624	7509	68 0	7·1	0·52	30·17	7,700	7,492	72	69	70·5	4·8	0 35	30·0	7,550	7,316	71	5·2	0 38	30·03	7,638	+0·2	−2 3	+1·9	..	..	..	..	..
,, 19 . .	58	29·47	8394	8285	65·0	7 2	0·53	30 0	8.540	8,309	70	66	68	4 65	0·34	29 81	8,390	8,163	69·5	5 3	0·39	29 86	8,500	−0·28	−1·7	+2·3	..	..	..	..	..
,, 20 . .	59	29·55	8293	8210	65·0	7 2	0·53	30·08	8,430	8,228	70	66	68	4·65	0·34	29·89	8 350	8,124	69 5	5·2	0·38	29·93	8,397	−0 22	−1·2	+2·05	..	..	..	..	..
,, 21 . .	58	29·47	8309	8225	64·0	7·2	0·53	30·0	8,430	8,219	69	65	67	4·65	0·34	29·81	8,170	7,949	68 5	5·2	0·38	29·85	8,343	+0·08	−3·2	+1 5	..	..	..	..	..
,, 22 . .	58	29 47	8263	8197	63·0	7·2	0·53	30·0	8,370	8,186	68	64	66	4 7	0·34	29·81	8,060	7,875	67·5	5 2	0·38	29·85	8,295	+0·13	−3·8	+1 33	..	..	..	..	..
,, 23 . .	58	29 47	8098	8017	64·0	7·2	0 53	30·0	8,170	8,015	69	65	67	4·7	0 34	29·81	7,960	7,745	68 5	5·2	0·38	29·85	8,131	+0·012	−3·3	+1 4	..	..	..	..	..
,, 24 . .	55	29·22	7978	7906	60 0	7·2	0·53	29 75	8,060	7,874	65	61	63	4·7	0·34	29·56	7,810	7,615	64·5	5·2	0·38	29 75	8,009	+0·39	−3·3	+1·65	..	..	..	..	..
,, 25 . .	55	29·62	8317	8317	62·0	7·2	0·53	30·15	8,410	8,309	65	63	64	4·7	0·34	29·96	8,170	8,072	64·5	5·2	0·38	30·0	8,468	+0·09	−2·8	+1·8	..	..	..	..	..
,, 26 . .	56	29·82	8130	8162	63·0	7·2	0·53	30·35	8,170	8,105	66	64	65	4 7	0·34	30·16	8,100	8,035	65·5	5·2	0 38	30·2	8,280	+0·703	−0·86	+2·15	..	..	..	..	..

TABLE II.

Sept. 16 . .	53	29·7	..	..	..	..	..	..	9,180	9,198	60	60	60	5·2	0·38	30·08	9,360	9,397	60·0	5·9	0·43	30·13	9,380	..	+2·1	+1·9	..	..	..	..	..
,, 17 . .	59	29·78	..	..	..	..	..	..	11,400	11,308	66	64	65	5·2	0·38	30·16	11,410	11,307	66·0	5·9	0·43	30·21	11,560	..	−0·01	+2·3	..	..	..	..	..
,, 18 . .	63	29·75	..	..	..	..	..	..	12,120	11,817	69	67	68	7·1	0·52	30·22	12,170	11,877	69 0	8·1	0·60	30·3	12,120	..	+0·4	+2·5	..	..	..	..	..
,, 19 . .	61	29·8	..	..	..	..	..	..	11,810	11,645	70	68	69	7 1	0·52	30 32	11,860	11,706	70·0	8·1	0·60	30 4	11,956	..	+0·5	+2·6	..	..	..	..	..
,, 20 . .	52	30·0	..	..	..	..	..	..	11,560	11,716	65	63	64	9·4	0·69	30·69	11,600	11,739	65·0	10 3	0·76	30·76	11,900	..	+0·2	+1·7	0·728	0·4	184	8s. 0·52d.	Power
,, 21 . .	51	30.1	..	..	..	..	..	..	11,590	11,787	66	62	64	9·4	0·69	30·79	11,600	11,751	66·0	10·3	0 76	30·86	12,100	..	−0·3	+2·6	0·715	0·39	183	8s. 4 65d.	costs,
,, 22 . .	52	30·13	..	..	..	..	..	..	11,180	11,392	65	61	63	9 4	0 69	30·82	11,200	11,390	65·0	10·3	0·76	30·89	11,564	..	−0·01	+1·5	0 690	0 379	172	7s. 10 6d.	take
,, 23 . .	54	29·85	..	..	..	..	..	..	10,260	10,373	65	61	63	9·4	0·69	30·54	10,120	10,191	65·0	10·3	0·76	30·61	10,625	..	−1·7	+2·4	0 670	0·368	171	7s. 10d.	o 55d.
,, 24 . .	49	29·6	..	..	..	..	..	..	10,120	10,150	62	58	60	7·1	0 52	30·12	9,920	9,920	62·0	7·7	0 56	30·16	10,408	..	−2·2	+2·55	0·650	0·357	169	7s. 8·95d.	per
,, 25 . .	45	29·43	..	..	..	..	..	..	9,680	9,757	57	55	56	7·1	0·52	29 95	9,720	9,797	57·0	7·7	0·56	29 99	10,046	..	+0·3	+2·96	..	..	..	..	unit

Thomas Meter.

The condition of the parts inside the pipe line can be quickly and accurately checked from the panel without shutting-off the gas. The totalizing and graphic instruments can be checked against standard electrical instruments; connections being provided at the back of the panel for this purpose. Knowing the conversion factor, which is usually 12 watt-hours per 1000 c.ft. of gas, the totalizing instrument may be checked against the recording instrument by counting and accurately timing a certain number of revolutions of the watt-hour meter disc. From these remarks it will be obvious that, providing the condition of the meter housing is satisfactory, it is merely a question of checking the accuracy of the electrical instruments.

"Electro-Flow" Meter.

A somewhat similar statement would apply in this case. The instruments should be checked for zero and maximum scale readings, and the calibration of the instruments tested by standard resistance steps inserted in the circuit. The meter body should be inspected from time to time; particular attention being paid to the contact rods.

RECORDS AND RUNNING COSTS.

At Provan detailed records are kept of these meters. Tables I. and II. give typical examples of how these records are compiled. In the first instance, advantage is taken of the relatively small volume of gas passing to parallel-up two of the drum meters and run them in series with the venturi, "electro-flow," and Thomas meters, so that a direct comparison can be obtained. Particular care is taken to ascertain the temperature and pressure conditions prevailing at each meter. Under normal working conditions, the venturi meter readings are taken for record purposes. The percentage increase or decrease is therefore shown relative to the venturi meter readings.

Table II. shows a series of readings taken when the daily make was considerably greater. In this instance the venturi, "electro-flow," and Thomas meters are run in series; the percentage difference again being referred to the venturi meter readings. It should be noted that, while both venturi and "electro-flow" meters have been recently checked, the Thomas meter has not been tested for some considerable time. The venturi meter requires only sufficient gas to drive the small wet meter for operating the counter train, which amounts to 3 to 5 c.ft. per hour. The current consumptions of the "electro-flow" and Thomas meters are shown in Table II. As these meters are situated at the extreme end of one of the works feeders, a small transformer was installed to boost up the voltage. An allowance has been made for the efficiency of this transformer in computing the current consumption of these meters.

The figures under the heading "cost per day" show at a glance the relative operating costs of these two meters at the particular volume of gas passing. The maximum power consumption of the "electro-flow" meter is about 40 watts. In the case of the Thomas meter, for operating cost at full load conditions must not be taken *pro rata*, as the current consumption of the A.C. motor is constant for all loads; the increase being due solely to the increase in heater current. The accredited power consumption of the Thomas meter is given as 200 watts for the A.C. motor, *plus* 12 watts per 1000 c.ft. of gas passing. Irrespective of this, it will be obvious that the operating cost of this meter is a considerable item, particularly in works which are not so fortunately placed as regards power costs.

PERFORMANCE OF METERS.

It is extremely difficult to make hard and fast statements regarding the merits or demerits of these meters. One can look on the question from so many different angles; and such a variety of factors has to be taken into account in assessing the value of any particular installation. Consideration has also to be given to the relative accuracy of the different types of meter. The venturi and "electro-flow" instruments are designed to measure the flow of gas within an accuracy of (say) *plus* or *minus* 2 p.ct.; while the Thomas meter under normal working conditions is designed to integrate the flow of gas

within an accuracy of 0·3 p.ct. of full load value. A few observations on the actual performance of these meters may, however, be of interest.

Venturi Meter.

You will doubtless have remarked that the venturi meter readings are normally accepted for record purposes. Our experience so far has been that this meter worthily fulfils the function of a station meter. We have found it to be reliable, and have no reason to question its accuracy. This meter has now been in daily operation for over four years, and, beyond periodical checking and adjustments, has given the minimum of trouble. The counter readings require the usual corrections for temperature and pressure, while the diagram readings, in addition, require correction for varying specific gravity.

"Electro-Flow" Meter.

The "electro-flow" meter using the orifice plate in the pipeline has also given reasonably satisfactory service, except at low loads. In this meter at Provan there would appear to be a critical flow round about 350,000 c.ft. per hour, or approximately one-third full load, below which the meter readings are not at all consistent. Below this load, the small differential pressure thrown by the orifice plate does not seem to be sufficient to overcome some slight frictional resistance in the meter body. This could doubtless be obviated by changing, for the time being, the weight on the bell to suit the smaller volume passing, and altering the constant of the instrument accordingly. I understand that in the latest design of meter body steps have been taken to reduce the frictional resistance to the absolute minimum. The meters ought to read with reasonable accuracy down to 10 p.ct. of the maximum load. The fact that the meter readings have to be corrected for specific gravity is a decided disadvantage. Where the gravity of the gas varies considerably from hour to hour, due (say) to the admixture of varying amounts of water gas, a representative sample of gas would have to be drawn over the 24 hours, and from this the average specific gravity obtained. A variation of (say) from 0·50 to 0·55 in specific gravity would introduce an error of approximately 4·6 p.ct. in the meter readings. On the other hand, this meter has many advantages. It occupies little space, its installation does not entail any drastic alteration in existing pipe lines it is inexpensive in both initial outlay and running costs, and can be relied on to register with a reasonable degree of accuracy. Doubtless you can visualize many positions where such a meter could be used advantageously.

Thomas Meter.

We have not been so fortunate in our experience with the Thomas meter. In the first place, the operation of this meter depends on the continuous running of a small high-speed motor-generator set. There is at the back of one's mind a feeling of uncertainty in the continuous functioning of all high-speed mechanism. Hence one of the main reasons for the installation of such plant in duplicate. We seem to have been particularly unfortunate with the small single-phase A.C. motors supplied with these meters at both Provan and Temple. The first part to give trouble was the centrifugally-operated starting coil. Eventually we had to discard this arrangement, and introduce a twin-knob switch which operated the starting coil by hand. This arrangement had one outstanding defect. In the event of the supply failing owing to a temporary fault at the power station, or owing to the "breaker" on the supply panel being "tripped," on the supply being re-established the motor would start up without the starting coil in circuit, with dire results. To obviate this a no-volt circuit breaker was inserted, which would trip-out should there be any failure of supply, and prevent the motor being restarted without the starting coil being brought into operation. We also had trouble with the universal joint fixing in the gear case. At some convenient position in the pipe line, a closed steam coil heater is installed of sufficient capacity to raise the temperature of the maximum volume of gas flowing (say) 5° Fahr. Particular care should be given to this heater. The meter is designed to measure gas saturated with water vapour; and the presence of free water in the form of fog will cause the meter to register inaccurately. The effectiveness of the preheater may be determined by taking wet and dry bulb temperatures at the entrance of the meter housing. I mention this point advisedly, as considerable trouble was experienced due to excess water vapour and deposition in the Thomas meter installed for measuring water gas at the Temple Works.

As a rule, reliability and simplicity go hand in hand. While simplicity is, after all, comparative, I would not say it is an outstanding feature in the design of the Thomas meter. This meter certainly does not respond to the "left and forgotten" treatment often meted out to gas-works plant. It is a sensitive instrument, and its successful operation, to some extent at least, depends upon intelligent supervision. The troubles we have experienced have been chiefly due to mechanical defects, which have been overcome. I understand that various improvements have been introduced in the latest British design of this meter, with a view to making it more robust.

When the apparatus is functioning correctly, its registration is all that can be desired. It gives a most sensitive and informative graphic reading, and has the outstanding advantage of reading directly in standard cubic feet, without correction of any sort.

Graphic Records.

In conclusion, I should like to emphasize the moral and stimulating effect of graphic records. How true it is that reliable records mean better operating conditions. The chart not only acts as a reliable tell-tale, showing unsteady operating conditions, but gives an easy and speedy method of comparison. One could quote innumerable examples where accurate graphic records are of inestimable value. Not only are such records invaluable for current operations, but warning of faulty operations of any kind is given at once, so that steps may be taken to eliminate them, and avert more serious trouble. This is one point in particular which has deservedly received much attention in the design of modern meters.

Mr. McLusky (Glasgow) thanked Mr. Hall for his address, as also did Mr. W. J. Lennox (Falkirk), who congratulated Mr. Hall on his appointment as Lecturer on Gas Manufacture in the Royal Technical College, Glasgow.

On the motion of Mr. Gray, the new President was accorded a warm vote of thanks.

The next meeting of the Western District is a visit to the Granton Works, Edinburgh, on Saturday, Oct. 23.

IGNITION POINT OF GASES AT DIFFERENT PRESSURES.

[From a Paper by Prof. H. B. Dixon, C.B.E., D.Sc., F.R.S., and W. F. Higgins, M.Sc., before the Manchester Literary and Philosophical Society.]

The paper contains a preliminary account of experiments, made on behalf of the Safety in Mines Research Board, on the ignition-points of gases in a new form of the concentric-tube apparatus designed to work under pressure above or below that of the atmosphere.

Tests made in this improved apparatus gave much higher temperatures for the "rapid" ignition-points than did the apparatus used in Prof. Dixon's work in 1909. In the older experiments, the continuous stream of gas had time to self-heat as it passed upwards, mingling with the oxygen; and the observed ignition-point was that corresponding to a considerable lag. For instance, the ignition-points of hydrogen in oxygen and in air were found to lie between 580° and 590° in the old apparatus (1909)—*i.e.*, some 40° lower than the rapid ignitions recorded in the new cylinder. The gas would fire in the new cylinder at the old (lower) temperature, but only after some 7 to 10 seconds' lag.

It was obvious, then, that the ignition-point of hydrogen varied according to the time the mixture was heated; and after the first "rapid" ignitions, the hydrogen could reach the wall, and contact-action might influence the pre-flame period. This was borne out by later experiments.

As it was known that gaseous mixtures could be ignited by sudden compression at temperatures lower than the ignition-points found at ordinary atmospheric pressure, a steel

Ignition-Points of Hydrogen.

Lag.	i. In Oxygen.		ii. In Air.	
	New Apparatus. (1924).	Old Apparatus. (1909).	New Apparatus. (1924).	Old Apparatus. (1909).
Seconds.	Deg.	Deg.	Deg.	Deg.
0·5	625	..	630	..
1	622	..	625	..
2	615	..	619	..
3	607	..	613	..
5	597	..	602	..
7	589	..	592	..
10	582	585	585	585
15	573	..	577	..

cylinder was constructed to surround the furnace and concentric tubes. A comparison of the results of the ignition-points determined in this apparatus (referred to as the "closed furnace") with those obtained in the improved concentric tube apparatus with open furnace are given below:

Ignition Points of Hydrogen.

Lag.	i. In Air.			ii. In Oxygen.		
	Open Furnace.	Closed Furnace.	Diff.	Open Furnace.	Closed Furnace.	Din.
Seconds	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.
0 5	630	630	..	625	625	..
1	625	620	5	612	617	5
2	619	606	13	615	605	10
3	613	595	18	607	594	13
5	602	588	14	597	587	10
7	592	582	10	589	581	8
10	585	577	8	582	576	6
15	577	573	4	574	572	2

Similar experiments made with methane in the open and closed furnaces gave the following results:

Ignition-Points of Methane.

Lag.	i. In Air.			Lag.	ii. In Oxygen.		
	Open Furnace.	Closed Furnace.	Diff.		Open Furnace.	Closed Furnace.	Diff.
Seconds.	Deg.	Deg.	Deg.	Seconds.	Deg.	Deg.	Deg.
½	736	735	1	½	667	666	1
1	730	728	2	1	662	657	5
2	725	710	15	2	653	641	12
3	718	695	23	3	644	629	15
5	710	678	32	5	634	619	15
7	704	667	37	7	626	610	16
10	698	657	41	10	619	602	17
15	691	646	45				

These figures bring out the contrast in behaviour between a gas which rapidly self-heats, like hydrogen, and a gas which has a long pre-flame period, like methane, when the conditions of heating vary.

Effect of Pressure on Ignition-Point.

The following results show the effect of pressure on the ignition points of methane:

Ignition-Points of Methane in Air under Different Pressures.

Lag.	100 mm.	200 mm.	400 mm.	600 mm.	760 mm.	1520 mm.
Seconds.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.
½	815	788	765	753	746	722
1	804	768	747	737	728	711
2	782	733	717	712	710	690

Lag.	3 At.	5 At.	7 At.
Seconds.	Deg.	Deg.	Deg.
0·5	705	675	653
1	695	666	644
2	680	652	633
3	667	640	624

With hydrogen, the effect of change of pressure on the ignition-point in air was in marked contrast to the results found with methane. As the pressure was increased above atmospheric, there was a small rise in the ignition-point, which reached a maximum at 1000 mm. pressure; above this the ignition-points fell regularly. When the pressure was reduced below atmospheric, the ignition-points fell at first slowly, and then more and more quickly, so that there was more than 100° difference between the ignition-points at 760 mm. and at 75 mm.

Ignition-Points of Hydrogen in Air under Different Pressures.

Lag.	75 mm.	100 mm.	200 mm.	400 mm.	600 mm.
Seconds.	Deg.	Deg.	Deg.	Deg.	Deg.
0·5	513	524	558	598	622
1	511	521	554	592	614
2	509	519	549	581	601
3	..	..	545	576	592

—	760 mm.	1000 mm.	1200 mm.	1520 mm.
Seconds.	Deg.	Deg.	Deg.	Deg.
0·5	630	632	630	628
1	620	623	621	619
2	606	609	609	608
3	595	600	600	599

Experiments made with oxygen instead of air show that the ignition-points of methane continue to rise as the pressure is reduced below atmospheric, but reach a maximum about 200 mm. pressure; below this the ignition-points begin to fall as the pressure is lowered. This fall in the ignition-point at very low pressures as well as at high pressures appears to be a general property of combustible gases. It holds with all the gases we have so far tried, and has yet to be explained. It would seem as if two forces were at work, one (probably the attractive force between molecules) tending to facilitate ignition at high pressures, the other (like dissociation) most effective at low pressures. The sum of these two forces is a minimum at the crucial pressure where the maximum ignition-point is found.

Thyssen Rotary Low-Temperature Retorts.

Various low-temperature carbonization processes were described in a paper presented some time ago by Mr. H. W. Brooks (Consulting Engineer to the Fuller-Lehigh Company) at a joint meeting of the American Chemical Society with other bodies. Among these was the large rotary retort designed some years ago by Messrs Thyssen & Co., of Mulheim-am-Ruhr. At the present time there is a plant of 100 tons a day throughput at this firm's works, another at the Hamburg Gas-Works, and two units at a colliery. The Thyssen retort, Mr. Brooks pointed out, is of surprising simplicity and capacity, and consists of an iron drum, built in one piece, 78½ ft. long and 8½ ft. in diameter. The coal is fed into this rotating tube at one end, and is carried through its whole length in two hours (by means of helical screw lifters riveted to the drum), dropping out at the other end in the form of semi-coke. The iron drum runs in a chamber which is fired with producer gas; the chamber being heavily lagged against heat losses. The distillation gases leave the drum, together with the tar vapours, at the same end as the semi-coke. The principal difficulty with which the Thyssen plant has to contend is the formation of dust. This trouble is particularly pronounced in large rotary retorts, because the friable semi-coke is kept in rolling and tumbling motion, and the dust is thus continuously stirred-up. As the presence of dust in the tar interferes with the separation of the water, and lowers the value generally, it is necessary to remove it before the tar is condensed. Special dust separators are thus required to throw down the dust from the hot gases; but even with such collecting equipment, the tar is likely to contain 1 to 2 p.ct. of dust.

Combined Gas Producer and Lime Kiln.

"Engineering" describes and illustrates the Reid combined gas producer and lime kiln. The installation is in connection with a small lighting plant at Spring Bank Mills, Heathfield, for the Southern Counties Electric Light and Power Supply, Ltd., of Bournemouth. It consists of a 37-40 B.H.P. gas engine driving a 25-KW. Crompton dynamo, and is equipped with the usual switchboards, accumulators, &c. The ordinary gas producer is, however, replaced by a lime-burning kiln, which, in addition to producing properly burned lime of good quality, supplies the engine with the necessary gas for full power operation. The process of manufacturing gaseous fuel from lime kiln gases is the invention of Dr. T. A. Reid, F.C.S., Chairman of the British and Foreign Lime and Power Corporation, Ltd., of Birmingham, which firm control the patents. A mixture of coke and limestone, in the proportion of 2½ cwt. of coke to 1 ton of limestone, is introduced into the kiln through a charging hopper; and, in the course of the combustion of the fuel, lime is produced from the limestone by the liberation of carbon dioxide, the volume of this gas being increased by contributions from the burning fuel. The only outlet for the gas is through a retort, the bottom of which is perforated; and the retort contains coke or anthracite maintained at a red heat by the combustion of the fuel in the body of the kiln. This has a reducing effect on the carbon dioxide, converting it to carbon monoxide. This gas is diluted by the nitrogen contained in the air for combustion; but the resultant gas contains 25 to 30 p.ct. of carbon monoxide, and burns quite effectively either in a gas engine or under a steam boiler. In tests recently carried out, the plant was run on bituminous coal, which enriched the gas by the addition of hydrocarbons. [This note appears to have some connection with the scheme of the Chalk Fuel, Power Gas, and Bye-Products Company, Ltd., regarding which comments appeared in our issue for June 16, p. 583, and a letter on July 14, p. 89.—Ed., "G.J."]

Royal Sanitary Institute Health Exhibition.—The Institute are organizing a Health Exhibition to take place in Hastings next July. Heating, cooking, lighting, ventilating, and smoke-preventing appliances will form a section of the exhibits. Communications regarding this exhibition should be sent to the offices of the Institute, 90, Buckingham Palace Road, S.W. 1.

American Society of Mechanical Engineers.—We learn that Dr. C. H. Lander, Director of Fuel Research of the Department of Scientific and Industrial Research, while in America as one of the representatives of Great Britain at the Bituminous Coal Conference in Pittsburgh, will deliver the Thurston Lecture before the American Society of Mechanical Engineers.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Development and Reconstruction of the Portslade (Brighton) Gas-Works.

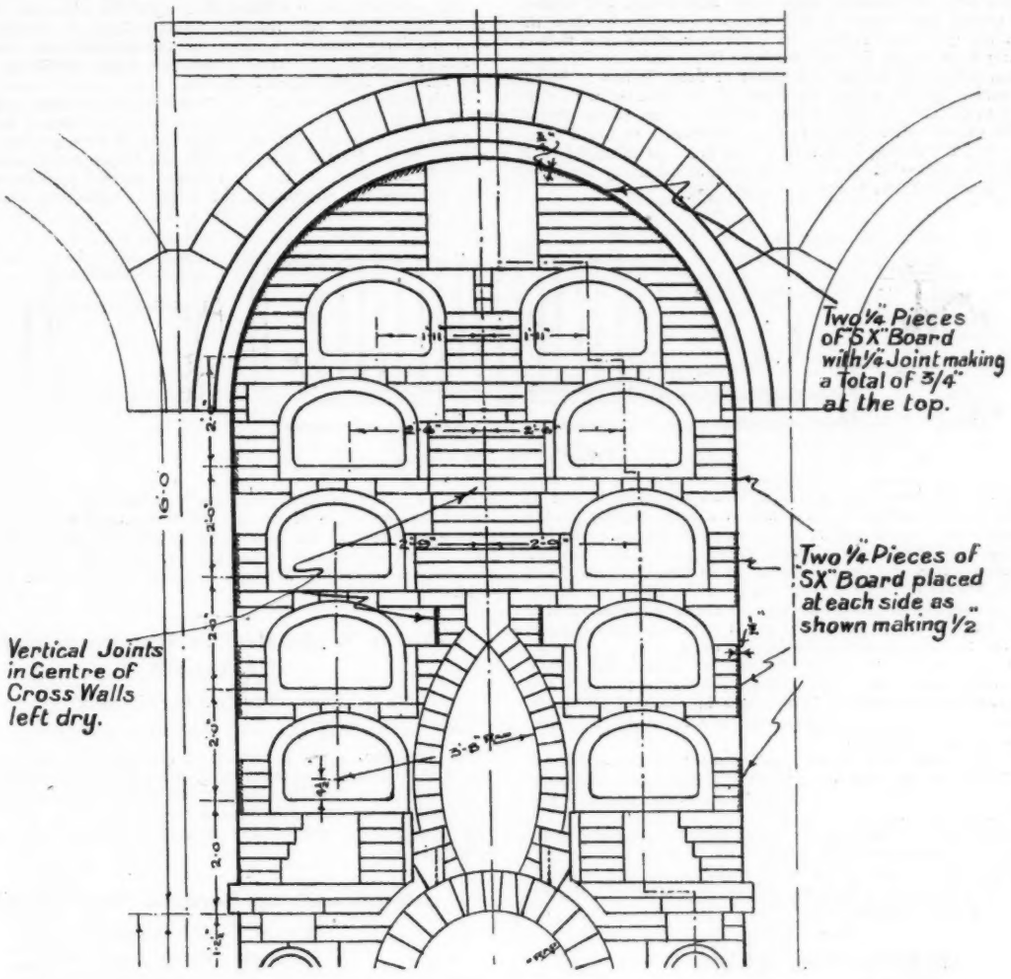
SIR,—In the "JOURNAL" of Oct. 13, "Ad rem" asks for further information as to the expansion of silica in all-silica settings, to which reference was made in the paper having the above title read before the Institution meeting last month; and the writer is glad to have the opportunity of replying to his inquiries. The writer regrets that in his reply to the discussion he did not deal more fully with the question raised by the President as to the expansion (which was referred to as $\frac{3}{8}$ in. to the foot, but the figure in the paper was given as $\frac{7}{16}$ in. to the foot).

This is a question to which an answer embodying a safe rule for all silica is difficult to give. It must be remembered that there are two distinct expansions—(*a*) the reversible thermal expansion of approximately $\frac{1}{8}$ in. to one foot, which is common to all silica; and (*b*) the after expansion, which varies with every manufacturer's material, dependent as it is on the final firing temperature in the kiln. In experiments made at Portslade, the latter variation has been between somewhat under $\frac{1}{32}$ in. to nearly $\frac{1}{4}$ in. per foot; and this amount has to be added to the $\frac{1}{8}$ in. reversible expansion. It is well to subject all silica material to physical and refractory tests, the results of which determine the amount of expansion for which allowance must be made. In the all-silica settings at Portslade, an allowance of $\frac{1}{8}$ in. per foot is made for the reversible thermal expansion, and $\frac{1}{16}$ in. for the permanent expansion, making in all $\frac{3}{16}$ in. to one foot, because this figure was found to correspond as nearly as possible to the expansion ascertained by actual experiment on the particular brand of silica used.

In response to "Ad rem's" suggestion, the drawing accompanying this letter shows the method employed at Portslade for taking-up the expansion of the silica in a setting of tens. From the drawing, it will be seen that the setting, which is 9 ft. wide, requires an allowance of 9 by $\frac{3}{16}$ in. = $\frac{27}{16}$ in. for the lateral expansion; so two layers of S.X. board, each $\frac{1}{4}$ in. thick, are placed at each end of the cross-walls, and the balance of $\frac{11}{16}$ in. is made up by dry vertical joints between the bricks in the centre of the crosswalls. In the vertical height there is approximately the same expansion to be provided, $\frac{3}{4}$ in. of which is taken at the top, and the remainder in thick joints under, and linable with, the retorts.

With regard to the allowance in the length of the retort, each segment is put in with a thick joint (about $\frac{1}{4}$ in. to $\frac{3}{8}$ in.); and when the bench is put under slow fires, sufficient jointing material is squeezed out to accommodate the expansion without disturbance to the setting.

It may be added that a copy of this letter and drawing is being forwarded to the Institution of Gas Engineers for inclusion in the reply to the discussion on the writer's paper, and that the President has given permission for this answer to be made to "Ad rem's" inquiry, as the questions raised are obviously of interest to those engineers who contemplate installing all-silica settings.


Two ¼" Pieces of SX" Board with ¼" Joint making a Total of 3/4" at the top.
Two ¼" Pieces of SX" Board placed at each side as shown making ½"
Vertical Joints in Centre of Cross Walls left dry.

C. H. RUTTER.

Brighton and Hove General Gas Company,
77, West Street, Brighton,
Oct. 18, 1926.

Water Gas for Small Works.

SIR,—Our make of gas has never been more than 17 million c.ft. per annum. Will some of your readers, with experience, favour me by saying whether it is considered a business proposition for a small gas-works to add water gas to its equipment? Would the outlay and upkeep pay us? Our works serve a stationary population of 4000. Local inquiries so far have proved rather discouraging.

O. K.

Oct. 16, 1926.

Improvements to School Lighting.—The Education Committee of the London County Council report that they have accepted quotations in accordance with the Council's specification for improvements to the gas lighting at the following schools: St. Paul's Road, Limehouse, £150; Albion Street, Rotherhithe, £240; and Rockingham Street, Southwark, £197. The contractors in the last two instances are the South Metropolitan Gas Company.

Kenilworth Gas-Works Purchase.—When the shareholders of the Kenilworth Gas Company met to consider the recommendation of the Directors for the sale of the undertaking to the Coventry City Council for £38,500, a surprise was sprung by a counter offer of Dr. Harold Mason. On behalf of the Leamington Priors Gas Company, of which he is Chairman, he offered to purchase the concern. After a lively discussion, the recommendation to sell to Coventry was confirmed.

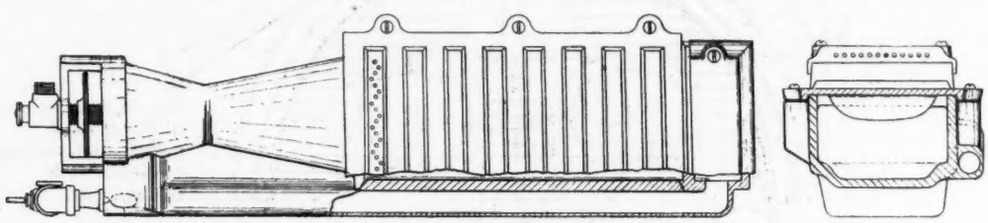
REGISTER OF PATENTS.

Burners for Fish Fryers.—No. 258,071.

Walton, T. and C., both of Rochdale.

No. 21,348; Aug. 26, 1925.

Regarding bunsen burners for gas-heated potato and fish frying pans, the patentees say: "The burners are usually of large size and have a substantially flat plate-like head, rectangular and elongated in plan. The pan is arranged low down and with the burner beneath it; the burner is difficult of access for lighting. To avoid burning the fat when (say) the demand temporarily falls away, and also to economize gas at such times, it is customary partially to close the tap. With the gas flame reduced to a glimmer, there is a risk of the gas firing back, and of the gas escaping; furthermore, when backfiring occurs, before the burner can again be used, it has to be extinguished and relighted, which, as aforesaid, is attended with difficulties. To avoid the gas firing back, the control tap is not always closed to the extent which lowers the gas sufficiently to avoid burning the fat, and the saving in gas is not as great as it might be if the gas could be reduced to the smallest amount necessary for keeping the pan warm without burning the fat."



Walton's Fish-Pan Burner.

According to this invention, a supplementary bunsen burner is provided, the head of which is arranged on a level slightly higher than the main burner head, and at one end or side thereof; the jets of the supplementary burner being arranged to project a substantially broad flat flame across the top face of the main burner head. Such supplementary burner is supplied with gas from the main gas supply pipe under the control of a separate tap, or under the control of a two-way tap which in one position allows gas to pass to both burners and in another to the supplementary burner only.

While the pan is in use, the supplementary burner is always lighted, and supplements the heat of the main burner; and when the main burner is extinguished, it operates in place of the main burner to keep the fat warm. At the same time it enables the main burner to be quickly relighted.

To prevent the firing back of the main burner, on being turned out, extinguishing the supplementary burner, a guard or baffle may be arranged between the top of the main burner head and the jets of the supplementary burner.

The supplementary burner may be made integral with the main burner, or it may be separate and attached to, or fixed adjacent to, the main burner—in the latter case being readily applicable to existing burners. The invention will be clear from the part-sectional plan and the sectional end elevation which we reproduce.

Hotplates.—No. 258,466.

Helps, G., of Nuneaton.

No. 1350; April 17, 1925.

In this invention for a hotplate the patentee claims the provision of means forming the sole support of the hotplate, comprising legs hinged to the hotplate and to feet adapted to rest upon a cooker or other base plate, and means for limiting the movement of the legs. The latter are also hinged to lugs, or the like, carried by the base plate. The hinge pins for pivoting the legs to the hotplate serve also to support a plurality of sections forming the hotplate proper.

Gas Fires in Sheet Metal.—No. 258,053.

Marris's Ltd., Marris, R. G., and George, W. J., all of Birmingham.

No. 19,218; July 29, 1925.

The patentees are of opinion that a gas fire with cast frame is apt to be cumbersome, and that the frame is liable to fracture; further, that the large moulds required for manufacture are costly. They therefore seek to avoid these difficulties, while preserving the generally accepted appearance of the fire.

Their chief claim is for "a gas fire having a framework built up from a plurality of sheet-metal sections comprising a base section, a vertically disposed section secured to said base section, a cowling secured to or formed integral with the upper front portion of the vertically disposed section, and means carried by one or other of said sections for supporting the burners, refractory back, and asbestos or other heating elements." They also claim reinforcing means for the edges of the several sheet-metal sections; the reinforcing members of the inner edge of the side pieces being formed with segmental portions to support an adjustable flue. Reinforcing bars are bolted on to the base section, to render the whole more rigid.

Utilizing Waste Heat in Water-Gas Making. No. 253,088.

Bamag-Meguin A.G., of Berlin.

No. 12,150; May 11, 1926. Convention date, June 4, 1925.

This invention is for a method of utilizing the waste heat available in the production of water gas, wherein cooling water heated to about 110° C. in a cooling jacket connected with the generator gives up its heat to an economizer for a waste-heat boiler also connected with the generator, and is thereby cooled and returns to the generator cooling jacket.

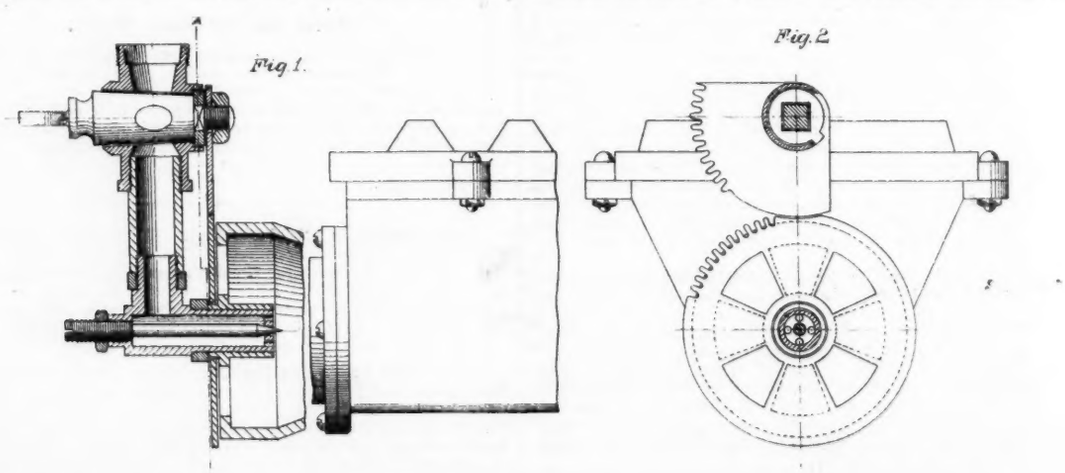
Self-Intensifying Burners.—No. 258,440.

Morgan, P., of Liverpool.

No. 27,689; Nov. 4, 1925.

This invention relates to atmospheric gas burners of the type in which the air supply is regulated automatically in accordance with the gas supply. The invention is particularly applicable, although not restricted, to self-intensifying and high-power burners.

Referring to fig. 1, a part sectional elevation, and fig. 2, a section on line A—A of fig. 1, it will be seen that the mouth of the mixing tube is formed with perforate and imperforate portions, and revolubly associated therewith is a plate or disc provided with corresponding



Morgan's Self-Intensifying Burner.

portions. Where the burner construction so permits, the disc may be mounted around the gas nipple. The plug tap, or an extension thereof, is fitted with a toothed quadrant which engages or meshes with rack teeth formed on a portion of the periphery of the revoluble air-controlling disc.

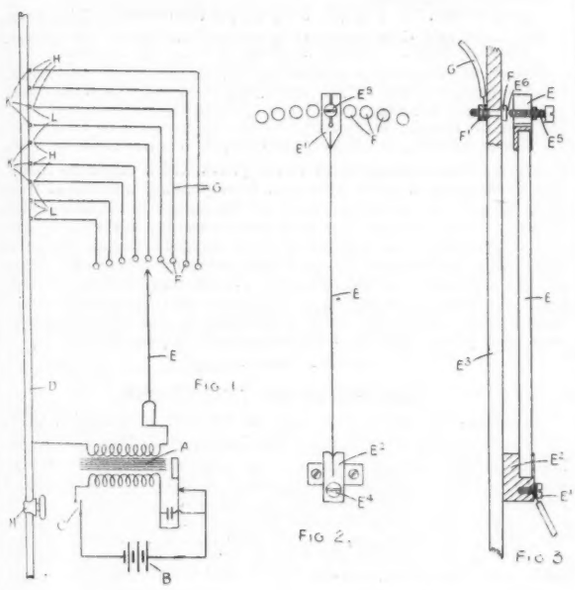
It will be noticed that the slight recessing of the air plate prevents its movement independently of the quadrant plate.

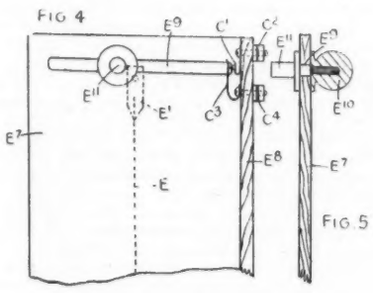
Electric Means for Lighting Burners.—No. 258,422.

LARKIN, M. W., of Brentwood.

No. 23,033; Feb. 19, 1926.

In electric ignition systems for gas burners, says the patentee, it has been proposed to effect the distribution of current from the high-tension lead of an induction coil to the spark gaps in the various lamps by a motor-driven distributor under the control of a relay device; and in such systems in which a number of electrodes are arranged to form with a part of the gas burner system a spark gap adjacent each burner, it has also been proposed to distribute high-tension current by means of a simple manually operative switch. The system according to the present invention comprises the combination of means for producing a high-tension current, a number of insulated electrodes arranged to form with a part of the gas burner system a spark gap adjacent each burner, and a manually operated switch or distributor which, when operated, continues to move over a series of contacts by its own momentum.





Larkin's Electric Gas-Switch.

A feature of the invention consists in means for providing an auxiliary spark gap in series with the main spark gap for effecting ignition of the gas. This auxiliary spark gap is between the movable element of the switch or distributor and the contacts with which the movable element is arranged to co-operate. Another feature is that the movable element will remain in motion automatically for a period of time sufficient to ensure effective distribution over the whole range of contacts with which it is adapted to co-operate. Further, the movable element is arranged to be set in motion by the action of switching on the high-tension current.

Fig. 1 is a circuit diagram of the complete system. Fig. 2 is a detail front elevation, and fig. 3 a side elevation, partly in section, of the switch or distributor. Fig. 4 is a detail view, and fig. 5 a sectional side elevation of the switch mechanism.

A represents an induction coil having a battery B and switch C connected in the primary circuit. One end of the secondary winding is earthed on to the gas supply pipe D, whereas the other end is connected to the base of the movable element E of the switch or distributor, which is arranged to co-operate with the contacts F which are connected by leads G to insulated electrodes H arranged to form, with the burners K, spark gaps L. A main gas supply cock is indicated at M.

The switch or distributor, indicated diagrammatically in fig. 1, is shown in detail in figs. 2 and 3, from which it will be seen that the movable element E, which is a strip of spring metal, and has weighted head E^1, is secured to a contact block E^2 mounted on a panel E^3 and provided with a suitable binding screw E^4 for connection to the high-tension lead from the secondary of the induction coil A. Obviously, instead of the arm itself being of spring metal, it may be a rigid arm resiliently mounted. The head E^1 preferably carries an adjustable contact screw E^5, whereby the gap E^6 between it and the contacts F can be adjusted. It will be seen that the contacts F take the form of studs mounted on the panel E^3, and are provided with binding nuts F^1 for the connection of the leads G to the main spark gaps L. The arrangement is such that when the spring E is deflected, it will continue to swing backwards and forwards across the row of contacts F, thus effecting distribution of the high-tension current to the spark gaps L through the leads G. Owing to there being no rubbing contact in the distributor device, the arm will continue its oscillations for a sufficient length of time to effect proper distribution. It is preferred to mount the arm in the manner shown on account of the increased amplitude of swing obtained with this arrangement in comparison with that of a pendulous arrangement in which the weighted head is below the point of support (although the invention is not limited to this precise arrangement).

Figs. 4 and 5 show an arrangement for setting the arm E in motion automatically with the action of closing the switch C in the primary circuit. The part E^7 may form a cover attachment for the panel E^3, on one side wall E^8 of which is mounted the switch, comprising a contact C^1 and suitable terminal connection C^2 and a second co-operating spring switch part C^3 also provided with a terminal connection C^4. A slot E^9 in the cover E^7 accommodates a sliding member E^{10} which has a stud E^{11} adapted to engage the head E^1 of the spring arm E.

It will be seen that as the sliding member E^{10} is moved to the right, it will carry with it the arm E, until the latter is released by slipping under the stud and is thus set in motion. At the same time, or immediately thereafter, movement of the slide E^{10} to the right has caused the stud E^{11} to engage the switch part C^3 and close the switch controlling the high-tension current. The switch is maintained closed by engagement of the stud E^{11} for as long as desired, after which the member E^{10} is moved back along the slot in readiness for its next operation. This return movement is preferably effected automatically, as by a spring; but this is not shown on the drawing.

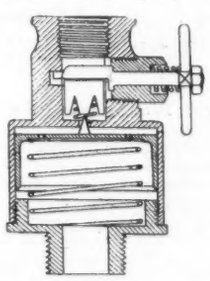
A suitable spark gap and electrode for a multi-burner lamp, and a convenient method of mounting the electrode, are also described, illustrated, and claimed as part of the invention.

Automatic Safety Gas Valve.—No. 257,750.

SAUNDERS, C. C., and SAVORY, C. B., both of Fleet.

No. 23,627; Sept. 22, 1925.

This invention has for object to provide an inexpensive, simple, and efficient construction of a safety valve for inclusion in a prepayment or other gas system. The gas on its way to the gas cock passes through a chamber containing a light spring-actuated piston provided with a needle valve which is adapted when the piston is not acted upon by the pressure of the gas to close the supply orifice into the chamber, the closure being effected by the spring. The area of the piston and the strength of the spring are so adjusted to the pressure at which the gas is supplied that in normal working the piston is kept in a "floating" position, the gas acting upon the whole area



An Automatic Closure Valve.

of the piston. Should the gas supply fail for any reason, the spring then closes the needle valve down on the supply orifice to the chamber.

When the gas flow is resumed, as on the introduction of another coin into the meter, the valve still remains closed, since the full pressure of the gas has only the area of the valve to act upon, and the force so developed is not sufficient to overcome the spring acting upon the piston. Even should a gas cock therefore have been left turned on, there is no escape of gas. In order to resume the flow of gas through the cock, it is necessary to raise the piston so as to allow its full area to be acted upon, and this is effected by mechanical means. In the preferred construction, this takes the form of a cam member mounted on a rotary spindle and acting either directly or through an intermediate member to "trip" the needle valve and so permit gas to pass through and act upon the whole area of the piston.

The accompanying drawing is a cross section of one form of the device.

MISCELLANEOUS NEWS.

GAS REGULATION ACT APPLICATIONS.

There have appeared in the "London Gazette" the following notices regarding applications to the Board of Trade under the Act.

SPECIAL ORDER.

Uxbridge, Maidenhead, Wycombe, and District Gas Company.

To make new provisions regarding the standard price of gas in the Maidenhead area, in relation to dividends, and with reference to the issue and disposal of stock under any profit-sharing scheme.

AMENDING ORDERS.

Market Harborough Urban District Council.

To provide that the maximum price per therm in respect of gas supplied by the Council be increased to 1s. 2d. per therm, in substitution for the existing maximum price of 11·8d. per therm for twelve months.

Midhurst Gas Company, Ltd.

The application is to substitute for the existing maximum price of 18d. per therm a maximum price of 24d. per therm, to operate until June 30, 1927.

DECLARATION OF CALORIFIC POWER.

Wells Gas Light Company.—450 B.Th.U., in substitution for 475 B.Th.U. (Jan. 1, 1927.)

A GAS-ELECTRICITY APPEAL AT BRISTOL

For Economy in Consumption.

The Bristol Gas Company and the Corporation Electricity Department have joined hands in appealing to consumers of their respective commodities to economize during the present coal emergency. The appeal has appeared in the local papers. Headed by the titles and office addresses of the two concerns, the advertisement (set in larger type than here) reads as follows:

To the **BRISTOL CONSUMERS** *of* **GAS** *and* **ELECTRICITY.**

Stoppage in the Coal Industry.

With the cessation of Summer Time, and the approach of Winter, the difficulties which have been experienced by the Bristol Gas and Electricity Supply Undertakings during the past five months, owing to the stoppage of work in the Coal-fields, will be increased.

We are therefore requested **to urge the importance of exercising economy in the use of Gas and Electricity for all purposes.**

We are confident that with the

CO-OPERATION OF THE CONSUMERS

we shall be enabled to maintain supplies.

By Order,

The Bristol Gas Company
S. E. HALLIWELL,
Secretary and Commercial Manager.

Bristol Corporation Electricity Department
F. W. PROSSER.
Sales Manager and Secretary.

8th October, 1926.

Commenting upon the advertisement, the "Bristol Times and Mirror" says:

"In a joint announcement, the Bristol Gas Company and the Bristol Corporation Electricity Department appeal to consumers to exercise economy in the use of gas and electricity for all purposes. The winter is nearing, and the difficulties which the two concerns have had in maintaining supplies on account of the prolonged coal stoppage will be increased. But they say with the co-operation of the consumers they both feel confident of continuing their supplies. It will not escape notice that these competing concerns are acting together in the interests of the State. In so doing they are showing an example of mutual good feeling which is none too general in commerce. But the management of these two Bristol undertakings evidently understand the art of minding their own business without the aid of stone-throwing. And both businesses are continuously making record sales."

The "Western Daily Press" remarks:

"Unless the coal dispute is ended promptly, or the miners resume work in very much larger numbers, it will be the duty of citizens generally to economize in the use of coal, gas, and electricity. As the position is rendered more serious by the fact that winter is coming on, the authorities are anxious that we shall all—business firms and private householders—be patriotic enough to do our best to make the limited supplies that are available last as long as possible. As will be seen by a large advertisement in to-day's issue, the coal shortage has resulted in a curious and unparalleled circumstance, in which two rival trading concerns, the Bristol Gas Company and the Corporation Electricity Department, are joining forces (so to speak) in an appeal to the public; and if it be true that 'in union there is strength,' we may hope that in the present instance it will evoke, from the citizens, a strong desire and will to do their patriotic duty. It must be confessed that most of us like to have a bright, cheerful fire, even if only to look at. But present circumstances are very exceptional—not to say critical; and it behoves each individual to have regard to the interests of the community."

The above excellent example may be strongly recommended to gas and electricity concerns throughout the country. There need not be competition in well-doing at this time. United action suffices.

PRICE OF GAS IN LONDON.

At last week's meeting of the London County Council, Mr. J. D. Gilbert, D.L., J.P., asked the Chairman of the Public Control Committee whether he was aware that the Gas Companies in London had recently increased their prices to consumers; whether he could make any statement as to what increases had been made by these Companies; and whether they were entitled under the Statute so to increase their prices. Mr. Gilbert further inquired whether all or any of the Companies had to obtain the consent of the Council to the increases, and, if so, did the Council make any investigation before agreeing thereto? Could the Chairman of the Committee state for what period such increases had been granted; and would they be reconsidered directly the coal stoppage ended?

Mr. W. J. Morton (Vice-Chairman of the Public Control Committee) said he was aware that since midsummer the following increases of price had been made:

Commercial Gas Company from . . .	9·4d.	to	9·8d.	per therm as from		Midsummer.
Gas Light and Coke Company from . .	9·4d.	to	9·6d.	,,	,,	Michaelmas.
	9·6d.	to	10·6d.	,,	,,	Oct. 2.
South Metropolitan Gas Company from	8·75d.	to	9·5d.	,,	,,	Midsummer.
	9·5d.	to	10·5d.	,,	,,	Michaelmas.
Wandsworth, Wimbledon, and Epsom Gas Company from . .	8·4d.	to	10·0d.	,,	,,	Michaelmas.

There was no statutory limit to the prices which might be charged; but an increase of price without a corresponding increase of "standard price" involved a reduction of the authorized dividend. None of the Companies had to obtain the consent of the Council, or of any other body, to an increase of price charged; but standard prices could only be increased by an Order made by the Board of Trade on the application of the company. There was no fixed period for such increases in the selling price; but, under the operation of the sliding-scale, there was every inducement to the Companies to reduce their prices as soon as conditions made it possible to do so.

EXHIBITION OF INVENTIONS.

That there is plenty of activity in the field of invention will be recognized by anyone who visits the Central Hall, Westminster, during the present week. From Oct. 13 to 23 inclusive, there is taking place there an International Exhibition of Inventions, organized by the Institute of Patentees (Inc.), of 39, Victoria Street, S.W.; and in declaring it open, Lord Askwith, K.C.B., the President of the Institute, stated that over 2000 exhibits were on view. The exhibition is divided into two sections—one open to those wishing to show articles already on the market, and the other devoted to inventions awaiting development. Prizes will be awarded in each of the five sub-sections into which the latter section is divided; and there is a gold medal for the invention adjudged to be the best in the exhibition.

Inventions already on the market include the "Skylux" gas ring, fitted with a central spring-actuated contrivance which automatically cuts off the gas supply when the weight of a utensil is removed, and lights up the ring (by means of a by-pass burner) immediately the central contrivance is depressed by the placing of a vessel on the ring. There is the "Perfecta" gas fire, which is designed to fit into an ordinary fire grate when the front bars are removed. At the back and sides is a large copper reflector. This is one of several portable fires on view; while the "table" type of cooker is also in evidence. It is, however, in the section devoted to inventions not yet on the market that the visitor may be expected to feel more interest, seeing that what is to be seen there is unfamiliar.

The sub-section for domestic labour-saving devices includes a griller and toaster which can be used on any gas cooker, and is said to grill to perfection in half the ordinary time—retaining all the meat juices during the process of cooking. The oven of a gas cooker is fitted with a mechanically-operated revolving spit, while the burners are fitted above the joint to be cooked, and in such a manner as to supply heat also to the top of the cooker. Another gas cooker is provided with a concave circular device, "whereby three articles can be cooked at once on one gas burner." It is made sectional in cast iron in four parts, to eliminate cracking through expansion and contraction. In another direction there is a magazine gas lighter for fires, &c., which is automatically operated when turning the gas on.

Sale of Coal in London.—The London County Council (General Powers) Act, 1926, received the Royal Assent on Aug. 4, and, as from that date, by section 41 of the measure, it became an offence to sell for household or domestic purposes within the County of London "coal containing, or having admixed therewith, an amount of slack or rock or incombustible matter which, having regard to all the circumstances of the case, constitutes an undue proportion of the total weight sold." It is provided that the various duties imposed by this section shall be carried out by officers and servants duly authorized by the Council.

EXTENSIONS AT WARRINGTON.

Application for £50,000 Loan.

The Warrington Corporation intend to spend £50,000 on remodelling the gas undertaking; and an application to borrow this sum formed the subject of an inquiry last week, by Mr. G. Ewart Rhodes, an Inspector of the Ministry of Health.

The TOWN CLERK, Mr. A. T. Hallaway, explained that the borrowing powers of the Corporation were practically exhausted. The Council had put in an application to the Board of Trade to extend the borrowing powers to £150,000 for the gas undertaking; but they did not propose to apply for this sum under the present inquiry, as it covered an expenditure for a considerable number of years. Their reason for applying for the loan before the Provisional Order was granted was because it was recognized that every week's delay in the reconstruction of the gas-works would increase their difficulties. The present poor condition of the works was a legacy of the war period, when the Council were forbidden by the Government to spend money on extensions. The expenditure of £50,000 included £34,968 for new vertical retorts, £1831 for a new screening plant, £2873 for coal stores, and £4328 on the provision of a new water gas plant.

Figures as to the borough's finances were given by the Borough Treasurer, Mr. J. Houghton, who informed the inspector that a penny rate produced £1613. He did not anticipate any increase of rates from the present proposal. The expenditure was expected to recover itself by increased revenues. The total indebtedness of the gas undertaking at present was £171,510.

INCREASES IN THE PRICE OF GAS.

Further Results of the Coal Stoppage.

The Dumbarton Town Council have decided that the price to ordinary consumers from and after the November survey shall be increased to the rate of 10d. per therm; and in the case of slot meters the rate per therm will be increased to 10·91d., to take effect at the ordinary survey to be made next December.

The price at Duns is to be increased from 5s. 10d. to 6s. 8d. per 1000 c.ft.

The Glasgow Corporation Gas Department have decided to advance the price by 11d. per 1000 c.ft., bringing it to 4s. 7d.

The Kilsyth Town Council have decided to increase the price by 10½d. per 1000 c.ft., making the charge 4s. for lighting, and 3s. 7d. for power and manufacturing.

The Kirriemuir Gas Company, Ltd., have resolved, at a special meeting, to increase the price of gas by 10d. per 1000 c.ft.

The Renfrew Town Council have announced that the price will be raised 3d. per 1000 c.ft.

The South Empsall Gas Company have advanced the price 1·34d. per therm.

The Vale of Leven Gas Company, Ltd., have found it necessary further to increase the price as follows: For ordinary consumers, 4s. 6d. per 1000 c.ft.; slot meters, 18 c.ft. for a penny.

The price at Walton-on-the-Naze and Frinton is to be increased by the Tendring Hundred Waterworks Company by 1d. per therm, as from the Michaelmas meter readings. The charge for gas taken through prepayment meters will be correspondingly raised.

The price at Wigton has been advanced 10d. per 1000 c.ft., making it 5s. 10d.

The Wombwell Urban District Council have decided to increase the charge by 3d. per 1000 c.ft.

SOUTH AUSTRALIAN GAS COMPANY.

The annual general meeting of the South Australian Gas Company was held at the offices of the Company in Adelaide on Aug. 26—Mr. A. R. LUNGLEY (Chairman of Directors) presiding.

The CHAIRMAN, moving the adoption of the report and accounts, said that the year's progress of the Company had been very satisfactory. The steady and increasing demand for gas continued in all directions; the quantity made for the year under review being 1340 million c.ft., as against 1211 millions for the previous twelve months—an increase of 10·64 p.ct. When it was realized that approximately this rate of increase had been maintained for the past eight or ten years, an idea would be gained of the growth of the business, and the provision of general organization and new plant necessary to cope with this growth. During the year the value of business done in the showroom was £82,328, and the total number of appliances sold 11,484, as against 10,130 for the preceding year. The sale of gas for industrial purposes, including factories, hotels, restaurants, &c., had again increased.

Since August of last year a beginning had been made with the building of the first unit of manufacturing plant on the site for their new works at Osborne; the unit in question having a capacity of 2 million c.ft. per day. The principal items comprising this first installation were a Woodall-Duckham vertical retort house, with exhausters, washers, scrubbers, purifiers, compressors, and bye-products treatment plant, &c., the necessary coal and coke handling plant, a 2 million c.ft. gasholder at Osborne, and an 18-in. steel main, through which the gas made at Osborne will be pumped to the metropolitan holders at Adelaide.

Messrs. Cochran & Co., Annan, Ltd., advise us that their London address, as from Oct. 8, will be 137, Victoria Street, S.W. 1. Telephone, Victoria 9341.

TRADE NOTES.

Spiral-Guided Holder for Bournemouth.

The Bournemouth Gas and Water Company have placed an order with Messrs. C. & W. Walker, Ltd., of Donnington, for a spiral-guided gasholder of 5 million c.ft. capacity, in a steel tank, to be erected at their Bourne Valley Works. The holder will be fitted throughout with Milbourne patent steel carriages and rollers. The inner lift will be 200 ft. diameter and 40 ft. deep; and the crown will be supported by a Milbourne patent truss, which will rise and fall with the holder, in order to give the required pressure.

Keith-Blackman "Junior Challenge" Boilers.

We have received from Messrs. James Keith and Blackman Company, Ltd., of 27, Farringdon Avenue, E.C. 4, an illustrated pamphlet describing their "Junior Challenge" boilers, which are constructed on similar lines to their well-known "Challenge" boilers, but have the cross tubes omitted. The "Junior Challenge" consists of two or more superposed sections mounted on a base, so that the capacity can be increased by the addition of sections. The sections have detachable cleaning doors at each corner, which provide for easy cleaning of the internal waterways.

The "W.G." Steam Wagon.

The Yorkshire Patent Steam Wagon Company have published a catalogue dealing with the Yorkshire "W.G." wagon, which they introduced to the public on the occasion of the 1926 Royal Show at Reading. They have given a large amount of information about this model. "X-ray" photographs have been used, so that non-technical as well as technical readers can visualize what is inside the mechanism. The catalogue deals only with the 6-ton "W.G." wagon in its three main models—the flat, the end-tipping, and the hydraulic three way tipping. The firm make a large range of bodies to suit different trades.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Oct.* 18.

The position as regards tar products is becoming more acute. Pitch is in the neighbourhood of 160s. to 170s. per ton, but practically no business is being done, as there is nothing available.

Creosote is scarce and firm at 8½d. to 9d. per gallon.

Tar spirits continue in demand, pure benzole being about 3s. per gallon, pure toluole 3s. to 3s. 3d. per gallon, and 95/160 solvent naphtha (say) 2s. 2d. to 2s. 3d. per gallon.

Pyridine is quiet at about 17s. per gallon.

Tar Products in the Provinces.

Oct. 18, 1926.

The average values of gas-works products during the week were: Gas-works tar, 105s. 3d. to 110s. 3d. Pitch, East Coast, 165s. to 167s. 6d. f.o.b. West Coast—Manchester, 157s. 6d. to 160s.; Liverpool, 160s. to 163s.; Clyde 163s. 6d. to 165s. 6d. Benzole, 90 p.ct., North, 1s. 11d. to 2s.; crude, 65 p.ct. at 120° C., 1s. 4d. to 1s. 5d., naked at makers' works; 50-90 p.ct., naked, North, 1s. 11d. to 2s. Toluole, naked, North, 1s. 11d. to 2s. nominal. Coal-tar crude naphtha, in bulk, 9d. to 9½d. Solvent naphtha, naked, North, 1s. 9d. to 1s. 10d. Heavy naphtha, North, 1s. 1d. to 1s. 2d. Creosote, in bulk, North, liquid, 8¼d. to 8¾d.; salty, 7⅝d. to 8d.; Scotland, 7⅝d. to 7⅞d. Heavy oils, in bulk, North, 7½d. to 7¾d. Carbolic acid, 60 p.ct., 1s. 4d. to 1s. 5d. prompt. Naphthalene, £11 to £14; salts, 90s. to 100s., bags included. Anthracene "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

Manchester District Tar Prices.

The average prices realized for the sale of tar in the Manchester district, according to the sliding scale, for the months of July and August were £3 10s. 8·58d. and £3 15s. 9·92d. respectively.

British Industries Fair (London Section).—Despite the holiday season and the serious effects of the coal stoppage, applications for space in the London Section of the British Industries Fair, which is to be held at the White City from Feb. 21 to March 4 next, have daily been reaching the Department of Overseas Trade. The total area applied for already considerably exceeds the whole space occupied at the last fair, and there is every indication that additional buildings will have to be linked-up with those previously used. Early arrangements will, however, have to be made for any such extension; and firms are advised to intimate their requirements at once.

Restricted Lighting at Market Bosworth.—It has been decided to restrict the supply of gas at Market Bosworth; and it will be on only from 11 a.m. to 1 p.m. and from 4.30 p.m. till 11 p.m. This is a sequel to a discussion between the proprietors of the gas-works and the Market Bosworth Parish Council. The latter declared that the charge for the coming season of £3 per lamp for street lights was excessive, and decided not to light the lamps. This was followed by a notice from the gas-works intimating that, in view of the decision of the Parish Council to use no gas for street lighting, when the present stock of coal was exhausted it was the intention to close the works. The notice of the restricted supply was given subsequently.

NORTH-EAST COAST COAL TRADE.

From our Own Correspondent.

There is no change to report in the situation, and business is still practically at a standstill. A certain amount of coal has been bought at prices round about 20s. f.o.b. for after-strike periods up to six months; but most of this is probably attributable to speculative buying by English exporters. Collieries continue to indicate these, and even higher, prices, but not with much hope of securing definite business. Indications from the Continent are that foreign buyers will not entertain any idea of business at more than 16s. or 16s. 6d. for the whole of next year. Collieries naturally will not go on at these figures in the present uncertainty of the position.

YORKSHIRE AND LANCASHIRE COAL TRADE.

From our Local Correspondent.

During the past week there has been a daily increase in the distribution of coal from the Midlands, and the situation is gradually improving. There is also an increase in the number of miners at work in Yorkshire; and with shipments of American coal forthcoming in addition, it is likely that the next few weeks will show a material difference in the various markets.

Some gas-works are rather short of supplies; but the authorities are effectively dealing with these cases.

COAL TRADE IN THE MIDLANDS.

From Our Local Correspondent.

Raids of North Country industrialists on Midland supplies, which sent up pithead prices to as much as 60s., have lost something of their intensity. Manufacturers in the Birmingham district still have to pay up to 60s. for coal into their factories, however, and slacks range up to 45s. Pithead quotations for slacks are from 32s. 6d. upwards, according to size and quality. The position with regard to domestic supplies is easy. Distributors are getting more than will satisfy applications for the fortnightly ration of 1 cwt., and considerable latitude is allowed in disposing of the balance. Delivery cannot be made in tons or half-tons, however; and this means a very disproportionate strain upon the distributive system.

The output from the Warwickshire and Cannock Chase coalfields on the south-west and the Derbyshire and Nottingham coalfields to the north-east has been improving appreciably. Resumption at the Leicestershire pits has augmented Midland resources, particularly in the matter of industrial grades.

Those Midland collieries which normally send a large part of their output to London have come to an understanding not to raise further their prices for that market. The general feeling is that the summit has been reached.

The Aeroplane in Survey Work.

It is believed that to the Louisville Gas and Electric Company belongs the credit of being the first public utility undertaking to possess and operate its own aeroplane. An experiment conducted by this Company during the past two years, to determine the practicability of aerial surveying has, according to Mr. Addison W. Lee (the Superintendent), pointed to the fact that an undertaking of the size of that at Louisville can afford to purchase its own aeroplane and equipment for aerial surveys, inasmuch as such surveys, of reasonable accuracy, can be made far more cheaply than ordinary surveys. Even precise survey work can be done aerially at about the same cost as with ordinary methods, while the time required for the work is very much less. Mr. Lee says that the greatest value of the aeroplane in this connection lies either in mapping large areas or surveying rights-of-way for pipelines, &c. Engineers are, as a rule, prejudiced against the use of aerial maps or plans, because they have been familiar with outline drawings marked with symbols; but it is found that continued use makes them enthusiastic supporters of the more modern method. Several vital rights-of-way have been secured by the Company furnishing farmers with enlarged photographs of their farms; while a city map of Louisville, taken from an altitude of 9600 ft., is used for laying out gas and electricity service extensions. The houses on each block can be counted and classified as to possible revenue, thus permitting extensions to be made much more intelligently than would otherwise be the case. Finally, the maps prove highly useful to the Company from the advertising point of view.

The Leamington Priors Gas Company held on Oct. 14, at their central showrooms, the first of a series of lectures which it is proposed to have once a month during the winter on subjects connected with the uses of gas. The address was given by Mr. Patching, of Messrs. W. M. Still & Sons, Ltd., Charles Street, Hatton Garden, London, E.C., who described in an interesting manner Jones and Still's various café apparatus, examples of which have been exhibited at work at the Company's showrooms throughout the week. The lecture was well attended by employees of the Leamington and Warwick Gas Companies.

At the Birmingham Police Court, on Oct. 14, two Corporation gasfitter assistants named Harry Smith and Arthur Barnes were placed on probation for twelve months, on a charge of being concerned in the theft of a cycle and an electric lamp from the premises of the Birmingham Gas Department at the Council House. Detective Larkman kept watch; and when caught stealing an electric lamp from a cycle in the yard, the youths admitted having previously stolen a cycle, which it was ascertained belonged to a gasfitter, also in the Corporation employ. It was in consequence of previous thefts from the yard of the Department where cycles were stored that a watch was kept.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Oct. 6.]

Nos. 23,740—24,466.

Bowater, N. J.—"Manufacture of gas." Nos. 23,930, 24,274.
Budgell, S. H.—"Attachment for gas cooking ranges." No. 23,759.
Cassel Cyanide Co., Ltd.—"Manufacture of carbon monoxide." No. 24,372.
Ewan, T.—See Cassel Cyanide Co., Ltd. No. 24,372.
Hooper, E. A. G.—"Bunsen burners." No. 24,110.
Sessions, A. J.—"Burners for gaseous, &c., fuels." No. 24,454.
Williams, G. A.—"Automatic gas regulators." No. 24,056.

[Extracted from the "Official Journal" for Oct. 13.]

Nos. 24,467—25,206.

Bailey, R. W.—"Gas or oil plants." No. 24,954.
Barnes, F. V.—"Gas lighting systems." No. 24,756.
British Arca Regulators, Ltd.—"Conditoning gaseous fluids." No. 25,198.
Bromley, H. H.—"Gas-fires." No. 24,673.
Coley, H. E.—"Apparatus for manufacture of gas." No. 24,919.
Davis, W. J.—"Gas meters." No. 25,031.
Evered & Co., Ltd.—See Barnes, F. V. No. 24,756.
Hollis, H. H.—"Gas purifiers." No. 24,997.
Ingman, C.—"Carbonization of briquettes." No. 24,621.
Lindsay, T.—See British Arca Regulators, Ltd. No. 25,198.
Metropolitan Vickers Electrical Company, Ltd.—See Bailey, R. W. No. 24,954.
Midland Coal Products, Ltd.—See Ingman, C. No. 24,621.
Pain, L.—"Burners for gas ovens." No. 24,923.
Sheppard, H. L.—See Bromley, H. H. No. 24,673.
Swift, W.—"Device for holding gas-ring and kettle, &c." No. 24,757.
Wardle, W. S. P.—See Pain, L. No. 24,923.

Painting of Treated Wood.

In a paper presented to the Paint and Varnish Section of the American Chemical Society, Mr. M. E. Dunlap, of the Forest Products Laboratory, Madison, described some painting tests of woods treated with various preservatives. In these it was found to be impossible to do satisfactory painting directly over creosote with white lead paint. The paint rapidly turned brown, and was exceedingly slow in drying. Sealers especially designed for covering bitumens were tried. Although the painting properties were improved somewhat, there was still an undesirable yellowing of the paint film. Mixtures of Montan wax and creosote provided better painting surfaces, and the bleeding of creosote was materially reduced. Staining still occurred, however, in proportion to the quantity of creosote in the mixture. Gas oil produced a yellowing of the paint in spots. Pine oil, while it did not discolour the paint, broke through the coating of one board at a number of points. Sugar, borax, zinc chloride, sodium fluoride, and mercuric chloride produced no discoloration of the paint. Chrome green paint (Brewster green) can be satisfactorily applied over creosote, but is slow in drying. Varnish can be applied satisfactorily over any of these preservatives. It is rather slow in drying over creosote, but is much better in this respect than oil paint. So far as the tests have gone, it can be said that all the oil preservatives tried are difficult to paint over successfully, because they discolour the coating and sometimes come through.

Cremation by Gas.—It is reported that a new method of cremation by gas which has been approved by cemetery authorities is shortly to be demonstrated at Bristol. A model crematorium on this system has been constructed to the directions of the Metropolitan Fuel Company, Ltd., the inventors, fitted with Cox ignite combustors. By this process it is claimed that any fuel gas can be used economically. Five minutes after the flame has been lit the furnace is ready for action. The model crematorium which is to be tried at Bristol is capable of dealing with a charge of about 60 lbs. weight. It is to be demonstrated at the works of the Bristol Gas Company.

Effect of the Coal Situation at Leeds.—The Leeds Corporation Gas Department last week issued extensive public advertisements appealing to the public to economize in the use of gas in view of the coal situation. It was pointed out that the Department are losing 1s. 4d. on every 1000 c.ft. of gas sold at present prices, and that the only alternative to economy is to curtail or stop the supply, which would be a hardship on consumers—especially at present. The extra cost of coal (making provision ahead, owing to uncertainty of deliveries), and other charges connected with the stoppage, have been £140,000, equalling 1s. per 1000 c.ft. sold for a full year.

Middlesbrough's Increased Consumption.—Alderman Sir Joseph Calvert, moving the adoption of the Gas and Electricity Committee minutes at the last meeting of the Middlesbrough Town Council, reminded the members that for about ten years past the supply of gas to the town had not been in the ordinary way from gas plant, as they had had the great advantage of supplies from coke ovens at the local works, which, however, ceased operations when the coal stoppage began. This necessitated bringing into operation once more the Corporation's gas-producing plant. On Sunday, Oct. 10, the consumption of gas in the town was 50 p.ct. above that of the corresponding day a year ago; and they would thus realize that the capacity of the works was being taxed to the utmost.

STOCK MARKET REPORT.

THE coal dispute continued to dominate the position on the Stock Exchange last week; and in the absence of any proposals for a definite settlement, the policy with regard to investments was "safety first." The steady drift back of the miners, however, is encouraging, and optimistic views were expressed on the possibility of a general return to work early in November.

In the gilt-edged market, 5 p.ct. War Loan was most prominent, and, on balance, rose $\frac{7}{16}$, 3½ p.ct. Conversion Loan rose $\frac{3}{8}$, and Funding Loan ¼. There was some activity in India loans on reported buying from the East. Corporation stocks are attracting more attention, and further issues are in contemplation. It is understood that Rotherham are issuing £750,000 on the usual terms, 5 p.ct. at 99½; and this may be followed by issues from Sunderland and Leicester.

Business in the Foreign Market was practically confined to dealings in the recent Hamburg, Westphalian, and Tokyo issues; and when the stag holdings are eliminated, an improvement in the quotations may be expected. In the Industrial Market the popular shares only were at all active.

The Gas Market (as will be seen by the Table) was remarkably steady. This was particularly the case with the Gas Light ordinary stock, the highest and lowest prices (84—84⅞) being exactly the same as for the previous week. It will also be observed that the variations in the quotations are unimportant. The Imperial Continental Gas Association announce an interim dividend of 5 p.ct. (actual), less tax at 4s., for the half-year to June 30 last, payable on Nov. 15.

The following transactions were recorded during the week:

On Monday, Bournemouth 5 p.ct. 12¾, 7 p.ct. maximum 12¾, 12¾, British 104, Croydon sliding-scale 98, 98½, Gas Light and Coke 84⅛, 84⅛, 84⅛, 3½ p.ct. maximum 59¾, 4 p.ct. preference 75, 75½, Imperial Continental 129½, Primitiva 12s. 3d., 4 p.ct. debenture (1911) 70⅞, South Metropolitan 91¾, 92. Supplementary prices, Gas Light and Coke 5 p.ct. debenture (interest from July 8, 1926) 100¾.

On Tuesday, Continental Union 7 p.ct. preference 84, 84½, Gas Light and Coke 84, 84⅛, 84¼, 84⅜, 84⅜, 3½ p.ct. 59½, 60, 4 p.ct. preference 75½, 3 p.ct. debenture 58½, 59, 59½, Imperial Continental 127, 128½, Primitiva 12s., 12s. 3d., 12s. 4½d., South Metropolitan 92, South Suburban 5 p.ct. 97¼, Wandsworth "B" 102. Supplementary prices, Gas Light and Coke 5 p.ct. debenture (interest from July 8, 1926) 100, Reading 5 p.ct. maximum 89, 90.

On Wednesday, Alliance and Dublin 83, 84⅜, Commercial 4 p.ct. 78, 3½ p.ct. 75⅞, 3 p.ct. debenture 55½, Continental Union 27¼, Gas Light and Coke 84, 84¼, 84⅜, 84⅝, 84⅜, 3½ p.ct. maximum 59½, 3 p.ct. debenture 58⅜, Imperial Continental 127, 129, Primitiva 12s. 1½d., 12s. 4½d., 12s. 6d., South Metropolitan 91¼, 92, South Suburban 5 p.ct. 97½, Southampton 5 p.ct. maximum 78⅜, Tottenham "B" 90ex 91. Supplementary prices, Brighton and Hove 5 p.ct. debenture 95⅜, Gas Light and Coke 5 p.ct. debenture (interest from July 8, 1926) 100¾.

On Thursday, Alliance and Dublin 84½, Continental Union 28⅛, European 6⅜, 6⅜, 6⅛, Gas Light and Coke 84, 84⅛, 84¼, 84¼, 84⅝, 84⅜, 3½ p.ct. 59¾, 3 p.ct. debenture 58⅜, Montevideo 81, Primitiva 12s., 12s. 1½d., 12s. 3d., South Metropolitan 91¼, 91½, 91¾, 92, Southampton 5 p.ct. 77¼ *ex* div. Supplementary prices, Brighton and Hove 4 p.ct. "C" preference 68, Derby 5 p.ct. 106, Liverpool 5 p.ct. 78½, 78¾, Montevideo 6 p.ct. debenture 98¼.

On Friday, Gas Light and Coke 84¼, 84⅜, 4 p.ct. preference 75½, Oriental 99½, 100½, Primitiva 12s. 3d., 12s. 4½d., 4 p.ct. debenture (1911) 70, 70⅜, South Metropolitan 91½. Supplementary prices, Eastbourne, 3½ p.ct. "B" 103, 103½, Guildford consolidated 96, 96½, Montevideo 6 p.ct. debenture 98¼.

The distribution of the dividends on the 4 p.ct. War Loan and Treasury Bonds eased the position in the short loan market at the end of the week. Renewals of over-night money were usually 4 p.ct., but balances became available at 3½ p.ct. towards the close. The higher rate of allotment in Treasury Bills —£4 16s. 3·46d. p.ct., or 4½d. p.ct. above the rate for the previous week—tended to keep the Discount Market firm notwithstanding the rise in the New York exchange, which improved to 4.85$\frac{7}{16}$, finally closing at 4.85$\frac{11}{16}$. French francs again showed improvement, the Paris rate being 1⅜ lower at 168⅜. Belgian francs also displayed firmness, but closed unaltered at 173¼. Further improvement in the Italian currency left the Milan quotation at 110¼.

Silver was again cheaper, and the forward quotation declined to 25d. per oz. There was no change in the price of gold, which remained at 84s. 11½d. per oz.

The Bank Rate is 5 p.ct., to which it was raised from 4 p.ct. on Dec. 3. Bankers' deposit rates are 3 p.ct. The deposit rates of the discount houses are 3 p.ct. at call and 3¼ p.ct. at notice.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr	Dividends. Last Hf. Yr.	NAME.	Quotations. Oct. 15.	Rise or Fall on week.	Transactions Lowest and Highest Prices.
£			% p.a.	% p.a.				
171,978	Stk.	Aug. 12	5	5	Aldershot 5 p.c. max. C.	72—75	..	
322,992	,,	,,	4	4	Do. 4 p.c. Pref.	65—70	..	..
1,851,868	,,	Sept. 30	6½	6½	Alliance & Dublin Ord.	83—88	..	..
374,000	,,	July 8	4	4	Do. 4 p.c. Deb.	67—70	..	88—84⅝
300,000	1	Oct. 14	1/7½	1/7½	Bombay, Ltd.	1–1¼*	..	..
170 000	10	Aug. 26	8½	8½	Bournemouth 5 p.c.	11⅜—12⅜	..	..
500,050	10	,,	7	7	Do. B 7 p.c.	11⅜—12⅜	..	12⅜
275,000	10	,,	6	6	Do. Pref. 6 p.c.	11—12	..	12⅜—12⅜
50.000	Stk.	June 24	3	3	Do. 3 p.c. Deb.	54—57	..	..
162.025	,,	,,	4	4	Do. 4 p.c. Deb.	74—77	..	..
214,740	,,	Aug. 26	12	12	Brighton & Hove Orig.	163—168	..	..
244,200	,,	,,	9	9	Do. A Ord.	125—130	..	..
1,387,500	,,	July 22	5	5	Bristol 5 p.c. max.	86½—87½*a*	..	..
855,000	,,	Sept. 30	7	8	British Ord.	102—107	..	104
100,000	,,	June 24	7	7	Do. 7 p.c. Pref.	114—119	..	..
120.000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	68—73	..	..
100,000	10	June 10	6	8	Cape Town, Ltd.	7—8	+½	..
100.000	10	Apl. 22	4½	4½	Do. 4½ p.c. Pref.	6—7	..	..
150,000	Stk.	June 24	4½	4½	Do. 4½ p.c. Deb.	68—73	..	..
626,860	,,	July 22	6	6	Cardiff Con. Ord.	94—97	..	..
237,860	,,	June 24	7½	7½	Do. 7½ p.c. Red. Deb.	99—102	..	..
167,150	,,	Aug. 12	6½	5	Chester 5 p.c. Ord.	88—93*b*	..	..
79.185	1	Sept. 30	†2/-	†2/-	Colombo Ltd. Ord.	27/—29/-	..	..
24,495	1	,,	1/4⅜	1/4⅜	Do. 7 p.c. Pref.	20/—22/-	..	..
1,518.280	Stk.	Aug. 12	5¼	5¼	Commercial 4 p.c. Cap.	77—80	..	..
560,000	,,	,,	5/3¼	5/3¼	Do. 3½ p.c. Cap.	74—77	..	78
475,000	,,	June 24	3	3	Do. 3 p.c. Deb.	55—58	..	75⅜
800.000	,,	Sept. 30	§2	§1	Continental Union, Ltd.	27—32	..	55½
200.000	,,	,,	7	7	Do. 7 p.c. Pref.	82—85	..	27½—28⅛
737.150	,,	Aug. 12	6½	6½	Croydon sliding scale	95—98	..	84—84½
403,100	,,	,,	5	5	Do. — max. div.	78—81	..	98—98½
492.270	,,	Aug. 26	9	6	Derby Con.	107—109*c*	..	..
55,000	,,	June 24	4	4	Do. Deb.	73—75*c*	..	..
209,000	,,	Sept. 16	5	5	East Hull Ord. 5 p.c.	84—87	..	..
50,000	,,	June 24	5	5	Eastbourn- 5 p.c. Deb.	91—96	..	..
1,002,180	10	Sept. 30	†4	†3	European, Ltd.	6—7	..	..
18,788 960	Stk.	Aug. 12	4/17/4	5/1/4	Gas Light & Coke 4 p.c. Ord.	83½—85½	..	62⅝—63⅝
2,600,000	,,	,,	8½	8½	Do. 8½ p.c. max.	58—61	..	84—84⅝
4,157 020	,,	,,	4	4	Do. 4 p.c. Con. Pref.	74—77	..	59½—60
5,602.620	,,	June 24	3	3	Do. 3 p.c. Con. Deb.	58—61	..	75—75½
181,315	,,	,,	—	—	Do. 6 p.c. Br'tf'd Rd. Db.	100—105	..	58½—59½
130.000	,,	—	10	10	Do. 10 p.c. Bonds.	..	..	..
42.000	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb.	..	..	..
82,500	,,	Aug. 26	6⅜	6⅜	Hastings & St L. 5 p.c. Conv	87—92	..	..
258,740	,,	,,	5½	6½	Do. 3½ p.c. Conv.	66—71	..	..
70.000	10	Oct. 14	†10	†10	Hongkong & China, Ltd.	19–20*	−½	..
173.300	Stk.	Sept. 16	5	5	Hornsey Con. 3½ p.c.	67—69	..	..
1,976.000	,,	May 20	10	†10	Imperial Continental Cap.	126—131	..	127—129½
226,170	,,	Aug. 12	3½	3½	Do. 3½ p.c. Red. Deb.	68—71	..	..
235,242	,,	Aug. 12	6½	6½	Lea Bridge 5 p.c. Ord.	92—97	..	..
2,127,840	,,	Aug. 12	5½	5½	Liverpool 5 p.c. Ord.	78—79*b*	..	..
600.000	,,	Sept. 30	7	7	Do. 7 p.c. Red. Pref.	100—102*b*	..	..
165,736	,,	Aug. 26	9	8	Maidstone 5 p.c. Cap.	112—117	..	..
63.480	,,	June 24	3	3	Do. 3 p.c. Deb.	53—58	..	..
75,000	5	June 24	†6	†7	Malta & Mediterranean	5½—5⅝	..	..
541,920	Stk.	May 20	†4	†6	Montevideo, Ltd.	80—83	..	81
2,061,315	,,	Aug. 12	5	5	Newcastle & Gateshead Con.	71—71½*d*	..	..
360.929	,,	,,	4	4	Do. 4 p.c. Pref.	73—74*d*	..	..
529,705	,,	June 24	3½	3½	Do. 3½ p.c. Deb.	68½—69*d*	..	..
15,000	,,	Aug. 26	11½	11½	North Middlesex 10 p.c.	151—156	..	..
91,530	,,	,,	8⅞	8⅞	Do. 7 p.c.	109—114	..	..
300,000	,,	May 6	9	7	Oriental, Ltd.	97—102	..	99½—100½
188,120	,,	June 24	7¾	7¾	Plym'th & Ston'house 5 p.c.	108—113	..	..
414,500	,,	Aug. 26	—	7/4/0	Portsm'thCon.Stk.4p.c Std.	102—107	..	..
236,732	,,	,,	—	5/0/0	Do. 5 p.c. max.	78—81	..	..
2,289,909	1	—	—	—	Primitiva Ord.	11/9—12/9	+·/3	12/—12/6
382,200	100	June 1	4	4	Do. 4 p.c. Red. Deb.	83—85	..	..
600,000	Stk.	July 22	4	4	Do. 4 p.c. Red. Deb. 1911	69—71	..	70—70½
180,305	,,	June 24	4	4	Do. B. Aires 4 p.c. Rd. Db.	69—71	..	..
356,847	,,	,,	4	4	Do. R'r P'te 4 p.c. Rd. Db.	69—71	..	..
150,000	10	Sept. 30	6	6	San Paulo 6 p.c. Pref.	7⅛—8	..	..
125.000	50	July 1	5	5	Do. 5 p.c. Red. Deb.	46—49	..	..
270.000	Stk.	Sept. 16	6	5⅜	Sheffield A	98—100*e*	..	..
419,968	,,	,,	6	5⅜	Do. B	98—100*e*	..	..
1,047.000	,,	,,	6	5⅜	Do. C	98—100*e*	..	..
90,000	10	June 11	4	—	South African	5—7	..	..
5,609,895	Stk.	Aug. 12	7	5	South Met. Ord.	90½—92½	..	91½—92
1,895,445	,,	July 8	3	3	Do. 3 p.c. Deb.	57—60	..	..
734.000	,,	Sept. 16	6½	6½	Do. 6½ p.c. Red. Db.	100—102	..	..
91,500	,,	Aug. 12	8½	8½	South Shields Con.	114—116*d*	..	..
1,187,795	,,	Aug. 12	6½	6½	South Suburban Ord. 5 p.c.	96—99	..	97½—97⅝
868,837	,,	June 24	5	5	Do. 5 p.c. Deb.	92 95	..	..
647,740	,,	Oct. 14	5	5	South'mpton Ord. 5 p.c.max.	75—78*	−2	77¼—78⅜
121,275	,,	June 24	4	4	Do. 4 p.c. Deb.	68—73	..	..
250,000	,,	Aug. 26	7	7	Swansea 7 p.c. Red. Pref.	100—102	..	..
200,000	,,	June 24	6½	6½	Do. 6½ p.c. Red. Deb.	100—102	..	..
120,000	,,	July 22	7⅜	7⅜	Tottenham District A 5 p.c.	105—110	..	..
882,275	,,	,,	5½	6½	Do. B 3½ p.c.	88—91	..	90—91
150,000	,,	,,	5½	5½	Do. 5½ p.c. Pref.	99—101	..	..
181,255	,,	June 10	4	4	Do. 4 p.c. Deb.	73—76	..	..
258,251	,,	Aug. 26	5	5	Tynemouth Con. and New	66 67*d*	..	..
197,294	,,	Aug. 26	6⅝	6⅝	Uxbridge, Maidenhead, & Wycombe 5 p.c.	85—90	..	..
88.330	,,	,,	5	5	Do. 5 p.c. pref.	80—85	..	..
91,800	,,	,,	6⅝	6⅝	Do. 5 p.c. Maidenh'd	85—90	..	..
30.000	,,	July 8	8½	8½	Wandsworth, Wimbledon, and Epsom— Wandsworth A 5 p.c.	122—127	..	..
255,686	,,	,,	7	7	Do. B 3½ p.c.	102—107	..	..
412,450	,,	,,	5/19/0	5/19/0	Do. C and New	88—93	..	102
352,000	,,	,,	6⅝	6⅝	Wimbledon 5 p.c.	98—103	..	..
98,000	,,	,,	7½	7½	Epsom 5 p.c.	104—109	..	..
88,416	,,	June 24	3	3	3 p.c. Deb.	54—57	..	..

Quotations at:—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *Ex. div. † Paid free of income-tax. ‡ Plus 8½ p.ct. p.a. special dividend. § For year.

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